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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.

COL. RUEHL'S ITINERARY

COBAN TRIP APRIL 19 - 23, 1938

(Taken by Armstrong & Ruehl)

Guatemala City

El Rancho

Coban

2 trips to Samac

2 side trips to Chivika

El Rancho

* * * * *

(Franke, Armstrong and Ruehl)

TRIP THROUGH ZONA REINA FROM GUATEMALA CITY

TO COBAN APRIL 27 to MAY 5, 1938

Guatemala City to Sacapulas

Sacapulas to Nebaj

Nebaj to Cotzal

Cotzal to young Hodgson's finca

Hodgson's finca to San Francisco

San Francisco to La Tanya

La Tanya to Klahr's plantation

Klahr's plantation to Charmar plantation

Charmar plantation to Sechar plantation

Sechar plantation to Don Roberto plantation

Don Roberto plantation to Samac plantation

Samac to Coban, to Samac, to Coban and back to Guatemala.

January 6, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey.

Dear Mr. Lukens:

(1) The work at Naranjo is progressing in satisfactory fashion. As of January 4, 1940, 204,887 Krukoff seedlings had been transplanted to the "Lower Nursery", including 107,295 from Panamá.

(2) Comfortable quarters will be awaiting Mr. and Mrs. Perkins in the second floor of the new house, upon their arrival, although the ground floor will probably not be entirely finished as to painting, final touching-up etc.

(3) I enclose the final Meteorological Record of 1940. In comparison to the 138 inches of rain at Naranjo proper in '40 (altitude 3800 ft.), we had 113 inches at "Loja" (altitude 4800 ft.) and 55 inches at "Chimborazo" (altitude 6000 ft.). (We have been taking measurements at "Chimborazo" only since July.)

(4) I acknowledge receipt of yours of December 24. Regarding the 2 tons of Erythrina Berteroana, the Smiths, I am led to believe, will collect it if given the stipulated price placed railroad station. You did not reply in your letter of December 24 to this question, i.e. whether the price of 20 cents per lb. before March 1, and 15 cents per lb. thereafter will be placed railroad station, placed finca or placed where. But I assume placed railroad station will be acceptable to Merck if it is to the Smiths, and as we want action on the collection, I am giving them the offer placed railroad station so that Owen can get the collection organized at once.

Very truly yours,

F R Jr.

F. Rosengarten Jr.

P.S. I talked with Owen Smith this morning and gave him the order as noted above.

He says he will start organizing the collection at once. He believes he will be able to collect the entire 2 tons in co-operation with the other Gordon Smith fincas. If he cannot collect it all, he will inform me at once so that I can seek a source for the remainder of our requirement.

F R Jr.

January 18, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey.

Dear Mr. Lukens:

(1) Receipt is hereby acknowledged of yours of Jan. 10, 1940. I have also noted Dr. Krukoff's memorandum. Re. the Pito from Coban, in December '40 it was still flowering. Perhaps in February when we plan to visit Helmrich again to collect Ledger seed, it will be possible to collect some specimens of seeds, pods, etc. of the Erythrina guatemalensis.

(2) Enclosed is a copy of a letter from Owen Smith which is self-explanatory.

(3) The last shipment of Krukoff seeds (#100) sent down, which I presume you kept at Rahway during the spring and summer of 1940, were in very good condition upon their arrival, and we have had much better germination with these seeds, which were sown in November '40 for the most part, than with other seeds of the same age and kind which we had kept at Naranjo in bottles, and which were sown at the same time as your seeds. We are very much interested in finding out exactly how these seeds were preserved by you, for the sake of future reference.

(4) The earthquakes mentioned in the weather reports are for the most part very mild in vehemence. Let us hope that they do not change their habits!

With best regards, I am,

Very truly yours,

F. R. Jr.

F. Rosengarten Jr.

COPY

Apartado Postal 284, Guatemala.
September 23, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey

Dear Mr. Lukens:

This letter will supplement Dr. Popenoe's letter of September 20, 1940.

1. I enclose a Memorandum of Understanding with the Smiths that is self-explanatory. We decided to give John Smith one thousand seedlings of the Krukoff 200 series, as he had not received any seeds of this class before, and we want of course to have as little chance for misunderstandings with the Smiths as possible. Owen Smith, although not having received any #200 before, will get a good batch among his 10%.

2. Mr. Gibson has found it impossible to come out to the finca this week, but has promised to leave with me on September 30 for Naranjo.

3. On September 30, I also intend to drive the new camioneta out to Naranjo myself, taking Gibson with me. Gibson has arranged the matter of license plates etc. for the truck. I intend to leave for Naranjo early tomorrow and return to the city in the end of the week, therefore, to get Gibson and the camioneta. I feel it most important to make sure that Gibson come as soon as possible to Naranjo while Franke is still on hand and co-operating fully.

4. The camioneta arrived in good shape. I am paying a mechanic \$5 to break it in slowly and run up at least 200 miles on the flat here this week before we start for Naranjo.

5. As Dr. Popenoe states, Franke may leave quite soon for other parts, so will you please authorize me to O.K. his six months salary being paid over to him in a lump sum, if you so approve. We feel that he has taken his bad news very well.

6. I have found a man named Eichenberger here in the city who does Photostatic work. As soon as he has made six copies of each plan of the cinchona field plantings, I will send you one of each to Rahway.

7. Thanks to the great understanding of Dr. Popenoe, we seem to have successfully overcome some personnel difficulties that might have been quite ticklish.

Best Regards,
Very truly yours,

FR Jr.

Finca El Naranjo,
September 24, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey.

Dear Mr. Lukens:

Franke has a Royal De Luxe Typewriter with a Spanish key-board which he bought new 2 years ago for 72 or 73 dollars. He has been using this typewriter since then almost exclusively for Company work. As the typewriter which we got from Mr. Armstrong is now out of order, and in the city being repaired, Franke's typewriter bears the burden of Finca work by itself. But even when we get Armstrong's typewriter again, I feel we will in the future have a very definite need for two machines here, as does Alejandro Hartleben.

Consequently, I strongly urge that we buy Franke's machine from him before he leaves. I told him that I knew you would make him a liberal offer for it. It is in first class condition. Before we bought Armstrong's typewriter, Franke's machine was of course the only one available for Company work. Will you please let me know as soon as possible what you consider to be a fair price under the circumstances?

Franke also has a saddle, bridle, and saddle cloth which were used for finca work in Helvetia. The saddle and saddle cloth are used at present in El Naranjo on the mules. Franke estimates the cost of this leather equipment was about \$30. Of course we need this equipment and should buy it from Franke.

Also there is another point. When Franke was at Helvetia, a horse was supposed to have been provided for him for his own use. Such a poor horse was given him that it broke down and consequently Franke bought himself an \$80 horse, out of his own money, which animal he later had to give away. I think it would be fair to give him \$50 to cover the horse loss plus his saddle equipment which we are now using.

Franke also bought chickens and turkeys out of his own money amounting to \$8, which fowl have been constantly utilized on the Finca. He should naturally be reimbursed for this.

I think we should allow Franke \$20 to cover the cost of a bed, sheets, and blankets which have been contributed by him for finca use.

Franke feels a little reticent about bringing up these expenses of his, some of which date back two or three years into the past. But I feel it would be most fair to both him and us to reimburse him in the above manner. He and I have talked this matter over, and the figures reached have been agreed upon as just by both of us.

Consequently, I only await your authorization to reimburse Franke with, (1) Whatever sum you believe his typewriter to be worth, (2) \$50 for horse and saddle costs, (3) \$8 for the chickens and turkeys, and (4) \$20 for the bed sheets, blankets and bed. That is, \$78 plus what you want to allow on the typewriter.

Please inform me as soon as possible regarding the grand total of which you approve in this matter, so that Franke may be treated in the most just fashion possible.

Very truly yours,

F. Rosengarten Jr.

F Rosengarten Jr.

September 27, 1940

Mr. Frederic Rosengarten, Jr.
Apartado postal numero 284,
Guatemala City
Guatemala, C. A.

Dear Mr. Rosengarten:

I arrived back in the States last Saturday and have not had a chance to write to you until today. Nevertheless I have thought a great deal about you and hope that affairs at the Finca are going well.

I have your letter of September 13th about the post-office box and have sent this letter there.

I had a letter from Dr. Popenoe dated September 20th, in which he told me that you have informed Franke about discontinuing his services. I think your decision is wise, and as long as you have told Franke it would be best to have him leave the Finca just as soon as possible. The Company will pay him six months' salary, and if he wishes this in a lump sum this can be arranged also. Simply ask Mr. Gibson to issue the check, using this letter as authority, if necessary.

I talked at some length with Mr. Perkins about the management setup in Guatemala, and as you know, he is entirely satisfied with the selections that we have made.

I also talked to your father on the 'phone recently and naturally he was very much pleased. I expect to have lunch with him on Tuesday, October 1st, at which time I will be able to tell him more of the Cinchona story.

We all wish you every possible success, and do not hesitate to call on us for any assistance that we can give.

Mr. Frederic Rosengarten, Jr. -2-

September 27, 1940

I assume that Mr. Pennock has left for Puerto Rico by this time and when he comes back thru New York, I will make sure that he appreciates fully that you are in authority.

I am sending you under separate cover, by ordinary mail, the article on Quinine that appeared in a recent issue of *Colliers*. In the same letter I am sending you a pamphlet published by Lilly on the bark of which is a picture of *Cinchona* cultivation in Guatemala. This is interesting. Frankly, I do not know just what they are doing, unless it is stripping bark from trees. I am also enclosing with the above, additional information on *Cinchona*. There are several copies enclosed so that they can be distributed to the Smiths and Pettersen.

I talked to our advertising man today about the exhibits at the Guatemala Fair and he is preparing for me sketches showing approximate layout. As soon as I have additional information I will pass it along to you.

I had a copy of a memo. from Dr. Krukoff concerning two Guatemalan plants, viz. Casimiroa edulis and Gliricidia sepium, used as insecticides, which I note he had asked you to obtain for him. I would suggest that perhaps Don Pacheco or one of his assistants might be able to find these for you.

I found on my return, that due to vacations, the bark samples from Coban had not been assayed. These are being worked on now, however, and results should start to come thru before long.

I have been asked by our Research Department to find out how many of the *Jacaratia* trees are still alive. You will remember there are some of these at Finca Panama and some at El Salto, also some were turned over to the United Fruit Co. At your convenience will you please try to answer this question.

Very truly yours,

R. P. Lukens

RPL:CS

cc Mr. Perkins
Dr. Popenoe

Apartado Postal 284, Guatemala.
September 28, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

(1) Coffee. The following deals have been closed with Esterlina and Los Angeles.

Esterlina can pick without having to give us anything in return all coffee to the west of Loma Grande.

With Los Angeles there is a mutual understanding:

(1) He can pick all coffee on Loma Grande and in return he will give us bamboo from Los Angeles for our nurseries, if we need it, (excepting a few stalks that he may need for himself) and, (2) He will cut down at his expense large shade trees along the Castaños-Naranjo road, that are in the Los Angeles cafetal, in order to allow more light to fall upon the road.

As far as Castaños is concerned, I will wait to hear from Mr. Perkins before making another move. The coffee for Castaños, (as well as Mr. Perkins) will come from the area between Loma Grande and the tunnel. Franke estimates that probably 200 Quintals can be gathered from this region. I suggest that we decide at once what we want to do about this coffee, so that an arrangement can be made with Hoehn that will be advantageous to him. If Mr. Perkins does not want any coffee, I suggest that you write to Nottebohm and tell them that we want to give the coffee to Hoehn because he is such a good neighbor. If Mr. Perkins wants, let us say, 50 quintals, we might make an arrangement between Nottebohm, Hoehn and ourselves regarding the cleaning of the coffee, Hoehn to take what Mr. Perkins does not want from the area mentioned above. In any event, Hoehn

would prefer that we explain to Nottebohn our favor to Hoehn, as he doesn't want to risk any possible misunderstanding with his boss regarding the "favours". If you want, I could talk to Nottebohn myself regarding this matter. In any event, please advise me at once what you want to do regarding this coffee.

(2) Fertilizer. When Dr. Popenoe and I were in El Naranjo on September 19, we were alarmed at the mortality and burned appearance of the #116 Krukoff seedlings in bed 24. At that time, there seemed to be some mystery as to just what had happened, as Benitez was not on hand, and he was the only one who could explain. All we could gather from Juan, Benitez' Indian helper, was that fertilizer had been put in the soil before the seedlings were transplanted.

What actually happened was this, I am told by Benitez. When Mr. Pennock was here, he told Benitez that it would be a good idea to put 8 ozs. of Ammo Phos in the soil of each seed-bed section of approximately 30 sq. ft. and then transplant the seedlings: that Mr. Pennock was sure that this would do the seedlings a lot of good. Actually the death rate among these valuable #116 seedlings is alarming. Ammo Phos was used in the same manner on 8 sections of transplanted #200 seedlings in another bed, and these are in the same unhealthy burned condition. Through comparison with other transplanted seedlings that have not been subjected to Ammo Phos, and which are in healthy condition, Benitez feels relatively certain that it was the fertilizer that caused the trouble. Benitez is quite upset by this turn of events, and is going to remove the stakes that shield the sides of the seed-beds in order to obtain more light and save as many as possible.

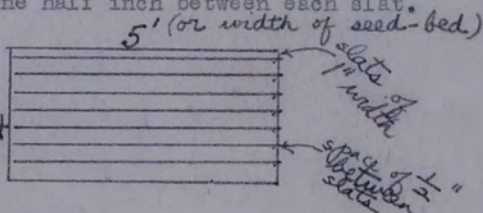
But this unfortunate incident brings up again a point made in Dr. Popenoe's letter of September 20, 1940. That is, if Mr. Pennock has any new and experimental ideas, i.e. ideas that are new and experimental in that they are not familiar to Benitez, if I may say so, I

feel that it is essential that they be carried out on a small experimental scale, and not on a major scale, especially with some of our most valuable material. At least as long as I am in charge down here, with your permission I shall insist on this.

Benitez thinks that the trouble may have been brought about because Mr. Pennock is used to the inferior soils of Puerto Rico, which are quite different from our Naranjo soils.

(3) Manaca leaves and Slat. Experiments on very small portions of one seed-bed are going to be carried out to test the value of these two items as shade for nursery beds. Benitez feels that it would be best to wait until the heavy rains which we are now experiencing cease before carrying out the trials. He seems to favor the plan of slats in frames: probably the slats will be 5 ft. in length and one inch wide, with a space of one half inch between each slat.

Slat to be placed crosswise on seed-bed at height not yet determined.



The wood needed for these slats will come from Naranjo, so the expense should be lower than the manaca leaves, which now can be obtained for 10 cents each.

(4). Don Pancho. Poor Don Pancho has had another of his spells recently, and his wife has come to El Naranjo to help get him back on his feet, which she is doing in a way nobody else can. The assurance that Dr. Popenoe and I gave him the other day that from now on Naranjo is to be his home has given him a new lease on life, but at the same time has had repercussions which we had not anticipated. When I went into his room recently to see him, I got the impression that (1) He was very ashamed of his past drinking behavior, (2) But from now on with such kind patrons all want a thing will not happen again, and (3)

(3) cont.-- He is very anxious to complete the work we have piled up ahead of us here, which (4) He thinks should be completed in four months, and (5) He wonders whether it might be possible to build a little house for him, his wife and his two children when the rest of the important work was completed.

Don Pancho asked me frankly about this plan, and I told him frankly that I couldn't promise him anything, but would write to you about it. He was emphatic about the point that he would only want an inexpensive little house, of course, and this naturally only after the other construction work was finished.

In favor of this plan, it might be said: (1) The house could be very cheaply built, from lumber now on Naranjo, and there would be no great rush to finish it. (2) Don Pancho is such a valuable man that having him definitely settled here for the rest of his life would be an insurance for us against all kinds of finca troubles of a mechanical nature which difficulties, it is said, he can handle better than anyone else on the west coast of Guatemala. (3) It would give him such great pleasure finally to have a place of his own, however humble, with his family, that it might add useful years to his life, and that being contented it would not be necessary for him to drown his sorrows. (4) His wife seems to be a serious minded first-rate ladina woman who has Don Pancho's health very much at heart, who would see to it that future debauching on Don Pancho's part would be at a minimum. (5) If Don Pancho should happen to die in the near future, (which I certainly hope will not happen) we would find ourselves with an additional modest dwelling on our hands which we might well be able to use to advantage.

Against this plan, the point well might be raised, do we want to burden ourselves with any more expense at this time down here?

I feel that there might be more advantages than disadvantages in the scheme. Will you please consider this matter and inform me of your point of view?

(5) Franke has been most co-operative, and I certainly think we should do our best by him, especially since we treated F.C. Armstrong so well.

(6) I am taking Mr. Gibson out with me to Naranjo in our new camioneta Monday at dawn. He now feels that ~~he~~ will be able to spend four days at Naranjo, which I feel to be the absolute minimum in view of the work we have to do.

(7) According to our plan, I have given all of our remaining Krukoff seeds, with the exception of a small quantity of ~~to Don Mariano Pacheco~~ #100 series, and he will now distribute these seeds as he sees fit. He is very grateful for this courtesy on our part.

Mr Pettersen has returned to Guatemala and I plan to visit him in the near future.

With best regards,

Very truly yours,

F. Rosengarten Jr.

F. Rosengarten Jr.

c.c. Dr. Popenoe.

Finca El Naranjo,
October 1, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

(1) I came out here yesterday with Mr. Gibson and the new camioneta. We are now going over the books, preparatory to setting up a new book-keeping system, based on his suggestions.

(2) I enclose a list of the results of Mr. Petersen's bark analyses. I am going to see him at Zapote within the next week, and shall give him a copy of this list. Will you, therefore, in line with Dr. Popenoe's suggestion, please write him a letter sometime soon, to the effect that we shall desire to use our 50% of grafting material from some of these trees in the summer of 1941, and will appreciate it consequently if he will get in touch with us before doing any grafting from any bark sampled trees in 1941, so that we can get together with him and give him a list of those trees from which we desire 50% of the propagating material.

(3) On going over the past Kitchen accounts with Franke, I find that he has taken a loss at times, but so loose was his book-keeping system in this item that he feels he has no right to make a claim as far as it is concerned. After investigating this matter, I feel that we should offer him \$25 to cover his personal Kitchen loss since coming to El Naranjo. He is satisfied with this arrangement. So Franke, if you approve, will be reimbursed for this sum along with the amount of which you approve for his typewriter, chickens, etc. as mentioned in my last letter from Naranjo re. his expenses.

(4) In my letter of September 28, 1940, I mentioned the idea of a dwelling for Don Pancho. After talking things over with Franke, I feel that we can make a very sound arrangement and modification of this plan. It seems that Mrs. Aires has kept a pension in the past, and at present runs a small tienda in Coatepeque. Why couldn't we build a combination tienda, second-class dining room and house for Don Pancho and his wife for about 1200 dollars? We would then have her take care of the tienda, run the second class dining room, and at the same time make Don Pancho happy and keep him sober. Franke and I both feel that Mrs. Aires is a capable woman and could handle this job very well. We will need a tienda and second class mess ultimately, anyway, and this would be a great opportunity, it seems to me, to combine these two essential items with a dwelling for Don Pancho, and combine them all in one cheap but useful building.

The building might well be placed on the site of the present stable, which will soon be torn down. Work on this combination building would not be commenced, of course, until the other important construction work is done. But I am very much in favor of this idea; I feel that it has many advantages and will not be costly. The fincas Helvetia and Panama have very similar arrangements.

I have talked with Mrs. Aires, and have discovered that she would be more than willing to run the tienda and second class mess. I told her that I could not promise her any-

thing at all, however, but that I would propose the plan to you and await your decision. I told her in the meantime by all means to keep her little store in Coatepeque (in which she makes practically nothing) and not to burn her bridges behind her. I can assure you that I have been most delicate in the discussion of this plan with them, so as not to involve us in any way , should you not approve, but I do hope that you will give this modest but sound idea serious consideration, with any restrictions and suggestions that you may choose to offer.

Very truly yours,

F. Rosengarten Jr.

Finca El Naranjo.
October 9, 1940.

Mr. R.F. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

(1) In a recent talk that I had with Franke, it was decided that he would leave Naranjo on or about November 15th, 1940. Having your authorization, I will arrange to have Gibson give him a cheque covering his six months salary in a lump sum plus other authorized reimbursements.

(2) Electricity is coming to us tonight for the first time by means of water power.

(3) During the past three days I have been on a trip which I sincerely hope may prove fruitful someday to the general development of Cinchona in Guatemala.

In the city about three weeks ago, I had the pleasure of meeting Rafael and Arturo Herrera, two brothers who are members of the distinguished Carlos Herrera family of Guatemala, which family is said to be by far the wealthiest in Guatemala. Both are about forty years old, and are very fine fellows, intelligent, sympathetic and active.

At that time, I gave them a copy of the Sands translation, and they were both very interested indeed in the contents. They have a property of roughly two and one half caballerias on the slopes of San Pedro, the volcano which is between Santa Clara and Lake Atitlan. They were very enthusiastic about the possibility of growing Cinchona on this site which lies about one hour from Panachel by boat.

So I arranged to have Rafael Herrera come out with me last Saturday to Naranjo to look over the Cinchona. We then left for Lake Atitlan to inspect his property.

His land is on the lake side of San Pedro, and contains soil which as an amateur I should characterize as a clay loam, dark in color, perhaps not as rich as the Naranjo soil, but with very good drainage. A small coffee nursery on the land is doing very well.

After having a quick look at the property, I left instructions with a guardian who lives there to build a seed bed 36 ft. by 5 ft., and to bring down enough virgin soil from the high slopes above to fill this bed to a height of ten inches from the bottom of the bed. Also to water this bed on the coming Sunday and Monday mornings, and to have an adequate supply of fine sand on hand on Monday, so that when Benitez comes over on that day with me he can prepare the mixture of the soil to suit himself before sowing approximately one and one half bottles of #100 series. This seedbed is to be perhaps 200 yards from the lake shore, so that there should be no problem about irrigation. The altitude is about 5000 ft. Using virgin soil, Benitez feels the seedbed should be a success. Come what may, not much money has been wasted.

I told Rafael Herrera frankly that I was no judge as to the ultimate value of the property for Cinchona, but that for the reasons stated it should at least serve, I felt, for a seedbed and nursery area. I said I felt that there might not be a heavy enough rainfall to enable the area to be used for a field planting.

The situation briefly is this, as I see it: the Carlos Herreras (family of Rafael and Arturo) own many properties all over Guatemala. They are intelligent honourable people, and have a lot of capital at their disposal. We want to cooperate with Guatemalans as much as possible, of course, in this project, and I feel that we have a fine chance here to cooperate to the utmost.

I then said that I hoped to bring Dr. Popenoe over to the property to appraise it as a Cinchona site when he returns to Guatemala, as his judgment merits the very highest respect in such a matter. I also hoped that Dr. Popenoe (if he would be so kind) might make a trip with the Herreras to some other properties of theirs in the Quiche etc., in an effort to point out suitable Cinchona land that they might own. Then in case that San Pedro doesn't work out, it might be possible to transplant the seedlings to a more advantageous site.

I feel that in the Herreras we may have absolutely ideal co-operators, due to their intelligence, enthusiasm, honesty and capital. We must not overlook at present the fact, I feel, that in a few years we may be interested in much more Cinchona land in Guatemala, and that we may not want to own it all ourselves.

I am looking forward to Dr. Popenoe's early return to Guatemala, therefore, in that I sincerely hope that the little seedbed in San Pedro may be just the beginning of a very important cooperative development in this Cinchona project.

Sincerely yours,

F. Rosengarten Jr.

F. R. Jr.

c.c. Dr. Popenoe.

October 10, 1940

Mr. Frederic Rosengarten, Jr.
Apartado postal numero 284
Guatemala City
Guatemala, C. A.

Dear Mr. Rosengarten:

Many thanks for your interesting letters of September 28th and October 1st.

I will try to answer some of the questions raised. First, the question about the coffee division. You can go ahead with the division as you outlined it in your letter of the 28th and give Castanos their share. Do not count on reserving any for our use here. Mr. Perkins' plans have not advanced far enough so that he can definitely take any of the coffee this year. I would suggest that you talk with Mr. Nottebohn about the coffee, rather than handle the matter from up here. I believe the additional contact will in general be beneficial and whatever benefit is derived might well all come to you down there.

I am extremely sorry to hear about #116 Krukoff series. It would look from the description given by you, as if the fertilizer were to blame, but naturally it is difficult to draw definite conclusions. In any case, I will ~~xxx~~ go over the matter with Mr. Pennock to be sure that he understands that all experimental work must be done on a small scale, and you are authorized to insist that this be done.

As you can see from the enclosed letter to Dr. Popenoe, I have sent him a partial list of the assays of the Coban ledgers. Needless to say the trees look very valuable.

I note in your letter, your plans for nursery covering. The main thing is to get a satisfactory covering rather than to worry too much about the relative cost. I will have to leave it to you naturally to decide on this.

I am sorry that Don Pancho has had

Mr. Frederic Rosengarten, Jr.

-2-

October 10, 1940

another spell. I believe it would be possible to build a small house for him, his wife and two children, and it seems that your suggestion that this might be combined with a small tienda looks to be well within reason. As you suggest, however, this should wait until more important Finca construction is finished.

Under separate cover, by air express, I am sending down to you the remainder of the #100 series (approximately 1,675,000 seeds). I would suggest that these be tested for germination and if they look all right they might be turned over to Don Mariano Pacheco or used ourselves, as you see fit.

You will remember that we spoke of obtaining two tons of Peto seeds for shipment to the States. I have been wondering whether you have been successful in making arrangements for this. It was agreed that we would try to obtain these at Zapote, if possible. There is another reason for getting them in the lowlands and that is, Dr. Krukoff has told me that there are some undesirable varieties in the highlands.

As suggested in your letter of October 1st, I will write to Mr. Pettersen requesting him to consult us before starting the 1941 grafting.

As for the loss Franke has taken in operating the kitchen, I am perfectly willing to reimburse him up to \$25, provided you are fully satisfied that he has definitely been short.

You spoke also of combining the second class dining room with the tienda and house for Don Pancho. I wonder whether this will work out. I would suggest that it might be well to talk to Gordon Smith or maybe Owen Smith. Mixing too many things together may not work out so well and would like to defer decision until you have talked to them.

Very truly yours,


R. P. Lukens

RPL:CS

enc.

October 22, 1940

Mr. Frederic Rosengarten, Jr.
Apartado postal numero 284
Guatemala City
Guatemala, C. A.

Dear Mr. Rosengarten:

I wish to acknowledge your letter of October 13, 1940 with weather report attached, and also your cable of the 20th, concerning the employment of HoeHN. I cabled you as follows:

"Am not fully convinced HoeHN necessary
to project stop will give matter
consideration stop letter to follow
stop must decision be immediate"

My reason for cabling you as above, is that in the first place I could not see why the decision had to be made so rapidly, and when it comes to questions of spending money for salaries I would like very much to discuss the matter with Mr. Perkins, who happens to be away at this time.

On the horticultural end do you really believe that we need additional help? As a practical matter, Benitez probably knows as much about Cinchona, when it comes to nursery operations, as anyone we can find, and on the scientific and research side, it seems to me that Pennock with his technical training and the excellent advice we can obtain from Dr. Popenoe, we are fairly well fixed. This leaves only the management of the plantation in general to be taken care of. The coffee we are not worrying about, which leaves us with the Finca administration. With the help of Don Pancho, Benitez and Hartleben, this should not be too difficult. Although I am favorable to the idea of hiring HoeHN, in some respects, there does seem to be the angle of making the project too heavy. Will you please, therefore, give the matter further consideration.

I am enclosing photostatic copy of soil analyses made on the samples taken at Naranjo some time ago. You will probably want to discuss these with

Mr. Frederic Rosengarten

-2-

October 22, 1940

both Dr. Popenoe and Mr. Pennock. I am not greatly impressed with the assays. The nitrate is good in most cases and the calcium is good, but the potash and phosphorus are low. Fertilization in this respect may be indicated. With Dr. Popenoe's copy of this letter I am sending him a photostat of the soil analyses.

Attached is a copy of a letter to Mr. Gibson which needs no explanation.

I have in Rahway 4000 Cinchona plants which were raised in Washington. These are from Krukoff shipment #2. The seedlings are about one year old. I hope to be able to get these on the Calamares leaving on the 25th, and will have them consigned as usual to Mr. Gibson. We will instruct you more definitely as soon as possible.

Mr. Gage recently gave me⁸ Bond Application to be filled in by you. Will you kindly do this as soon as possible and return it to Rahway. Please understand there is nothing personal about this, and that it is simply a matter of business.

I am sorry to hear that John Smith is leaving Guatemala to join the Royal Air Force. He certainly is a grand chap and I am sure we will all miss him. Kindly pass along my regards and I wish him the best of luck.

As soon as I am able to get the information from the Purchasing Department, I will send you something on the price of Cinchona bark.

I will pass the information about your salary along to Mr. Gage who takes care of matters of this kind.

Information about the fair has already gone forward to you.

Mr. Pennock was in to see me today and is having considerable work done on his teeth. He doubts that he will be able to get away before Saturday, November 2nd. I had sincerely hoped that it would be before this time.

Very truly yours,


R. P. Lukens

RPL:CS

enc.

cc Mr. Perkins
Dr. Popenoe

October 25, 1940

Mr. Frederic Rosengarten, Jr.
Apartado postal numero 284
Guatemala City
Guatemala, C. A.

Dear Mr. Rosengarten:

As you can see from the attached copy of a letter to Mr. Gibson, we have forwarded approximately 4000 Cinchona Plants to Guatemala. These plants are from Krukoff shipment No. 2 and were raised in Washington from seeds sent to them in October 1939. We tabulate below all the information that we have on these plants.

<u>Our sample number</u>	<u>P. I. number</u>	<u>Assay Quinine Sulfate U.S.P.X</u>	<u>Number of Plants</u>
7	134,285	6.6%	25
13	134,286	6.7%	398
24	134,288	5.2%	620
28	134,289	6.6%	285
30	134,290	5.9%	108
31	134,291	6.3%	508
33	134,292	5.9%	170
35	134,293	5.0%	580
40	134,294	5.3%	731
45	134,295	5.2%	648
			<u>4073</u>

I am sure that the records which you have in Guatemala will show Krukoff data concerning the origin of the plants.

I confirm 'phone conversation of October 23rd, in which you were authorized to proceed with the employment of Hoehn. As I told you before I was not particularly opposed to this move but just wanted to be sure every possible consideration had been given to our needs.

In connection with the above plants, we will have to bear in mind our contract with Owen Smith. Whether or not he will want his 10% I do not know.

Very truly yours, 

RPL:CS enc.

R. P. Lukens

cc Mr. Perkins
Dr. Popenoe ✓

Finca El Naranjo.
October 26, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

The contract, an English translation of which I sent you in my letter of October 24th, was signed on October 25th by Hoehn and me. He says that he will be able to start with us on either the 15th or the 25th of November, depending on the decision of Nottebohm regarding the date when they receive the resignation of Hoehn. As the new house will not be completed when he begins work here, he will come alone at that time and his wife and child will go to Quezaltenango pending its completion.

I have told Don Pancho, Benitez and Hartleben of the move, and they seem to be fully satisfied. Hoehn will thus officially become Administrator at Naranjo next month, taking the place of Franke.

I acknowledge your letter of October 22nd. Regarding the administration of the finca, the situation frankly was this: when I was not on the finca, it was not certain who was in charge. Purposely we did not appoint Benitez administrator, for we knew that it was quite possible that we would want to obtain a new Administrator sometime in the future, and then, of course, if we had appointed Benitez previously as Administrator, it would have been most difficult to explain the change to him.

Now idealistically everything should have gone well during my absence. That is, if we had all been Americans pulling together towards a goal. But as you know, we are a mixture of nationalities and temperaments here, and that is where the trouble came. Benitez used to become Administrator automatically in the past during the absences of Franke. Now beset with family and stomach troubles, and with the touchy ego of the half-Indian which he felt he should satisfy, he occasionally came and interfered with and criticized the work of Don Pancho without definite authorization and in a very unpleasant way. Of course, Don Pancho didn't like this at all. It must be said in Benitez's favor that he had not been told definitely to keep out of Don Pancho's work, as it was felt that such a blunt statement might have hurt his feelings. It was too bad that Benitez's wife arrived on the scene at the very same time that Franke dropped out of the picture, thus creating such a problem. For I think the real trouble was that we had no steady Administrator on the job all the time, and Benitez, harried by his wife (who made it quite clear when she first arrived on the finca that she didn't like it at all) and by the fact that he is in poor health, simply lost his head one day and caused some friction with Don Pancho.

Naturally this put me in an unpleasant position, because I did not dare to speak to Benitez harshly for fear that he might walk out on us (so upset was he by his wife's unhappiness at Naranjo). So I smoothed the situation over as best I could, Benitez apologized to Don Pancho, and now everybody seems to be happy again, including Benitez's wife, who seems to like it a little better here now. I am especially indebted to Dr. and Mrs. Popenoe for this latter event, in that since their recent talk with her, she seems to have taken a new lease on life.

The upshot of the matter was that Don Pancho came to me and told me that he thought that despite the fact Benitez did good work with the Cinchona in the field, that he made a terrible Administrator because at times he became almost crazy, and at these times became so disagreeable that it was impossible to get along with him.

So it became quite clear that, since I simply couldn't be on the finca all the time (as I had other important contacts and work), we needed an Administrator who would be here all the time.

The three possibilities at Naranjo wouldn't do: Hartleben was too young; Don Pancho liked his booze too much; and Benitez wouldn't work out especially because of his half-Indian temperament.

Accordingly, thanks to a magnificent suggestion on the part of Dr. Popence, I talked with Hoehn last Sunday and told him that as Franke was leaving us, we were thinking about obtaining another Administrator and would like to consider him as a possibility. He said that if he were offered the position, he would accept it at once. I then said that I couldn't offer it to him definitely, as I needed your O.K. first, and that is how the matter stood until I got your O.K.

This new move really ought to strengthen us considerably not only from the administrative point of view, but also agriculturally. Hoehn is an enthusiastic horticulturalist and has already had some experience with Cinchona at Castaños. Therefore, with Hoehn on the job here steadily, we would not be in such a weakened position if something should happen to Benitez-- especially since we will have the excellent technical advice of Mr. Pennock.

When you put me in charge down here, I understood that my job was to see to it that things in general ran smoothly and well. That is why I thought it necessary to get Hoehn, because I felt, and I still feel that only with a high type man like Hoehn here on the finca all the time, can the finca really run smoothly. (I would also like to say in passing that Franke was more deeply involved on the finca than we had thought, so when he and Dr. Popence both dropped out of the picture at the same time, it left quite a gap for me to fill, especially with Benitez upset).

Now that we have Hoehn, however, the finca should prosper; with Mr. Pennock's technical advice, we should make advances in this line; also, and undoubtedly a most important factor, we will continue to benefit from the very sound and helpful suggestions of Dr. Popence. I hope, whenever he may be in contact with us, which I sincerely hope will be often. Finally, it will be up to me to see to it that the Organization of the whole goes forward from every angle, including contacts, records, field work etc., a task that I should now be able to handle more effectively.

Very truly yours,

F. Rosengarten Jr.

F. Rosengarten Jr.

Finca Panama, Oct. 28, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

Will you please note the following change in the Individual Tree Records. The tree that we numbered at Patzulín as "R.1." should be "H 75 G", and was grafted in 1937, being planted in La Merced in September 1938.

The Jacaratia situation at Panama is as follows:

1. Jacaratia sp. # 9311 (probably Jacaratia dodecaphylla or Jacaratia heptaphylla). Received July 1938, planted Sept. 1938 as seed.
29 trees living. Of these there ~~are three~~ (damaged by gopher) that are small. The remainder are large, ranging up to 25 feet.

2. Jacaratia sp. # 4080 (Details lacking). Planted as seed January 1939.
2 medium (15 feet) and one small living.

3. Jacaratia sp. # 9313. (probably Jacaratia digitata) Received July 1938,
1 medium size (15 ft.) planted September 1939 as seed.

4. Jacaratia hessleriana # 9424. Received February 1939, planted as seed
in April 1939.
28 seedlings from 2 inches to one foot in height .

TOTAL number of trees and seedlings alive 61.

Of the Papaya there ~~are~~ 5 females and 8 males alive.

These figures were obtained with the kind assistance of Owen Smith.

Owen's grafts of this year at Los Andes, Panama, form an interesting experiment. 1,190 succirubra stock were planted in the field, at four foot intervals. Then the grafting operation took place, and so the grafting, instead of taking place in the Nursery, took place in the final field position. These grafts seem to be doing well, and it will be interesting to note their final success. These particular grafts were made on "El Nil" Succirubra roots, so that when the time comes to use them commercially (if all goes well), the roots, being a superior type of Succirubra might possibly be used with the rest of trunk bark, branch bark etc. It should also be interesting to compare the labor costs of this type of field planting with the customary nursery-field routine that requires an additional transplanting.

Very truly yours,

F. Rosengarten Jr.

Dr. Popenoe

Finca El Naranjo.
October 29, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

Having just returned to Naranjo with John Smith, I am very pleased to receive a copy of a letter from Dr. Popenoe to you, discussing the Helmrich seed contract. We sincerely feel that it would definitely be to our advantage to get all of Helmrich's seed for, let us say \$200 annually for three years, with the possibility of renewal of the contract ^{at that} ~~at that~~ time. At the same time we would like to have the sole option on cuttings from the selected Ledgers. Thus we could distribute free (or sell) the seed to others, or sow it ourselves (as we saw fit), and this magnificent seed might truly be a great help in building up the Cinchona project.

I enclose a copy of a letter from C. Griesing, a Nottebohm chief, and a copy of my reply to it (which was guided by the sound advice of Dr. Popenoe). Naturally we would rather have Hoehn earlier than December 18, but at the same time we want to carry out this affair in the smoothest possible fashion.

It seems fairly certain now that Franke will leave Guatemala on November 24th for New Orleans, then to California, then to Japan, Russia, and finally Germany. Good luck to him! He has been most co-operative since he received his notice from us; as far as the finca is concerned, he has not taken an active part there since Mr. Gibson's visit in the beginning of this month, but he has given me a lot of advice about general finca matters and has also helped us with certain orders for materials etc. in the city; I have told him that we would pay his salary up to November 1, 1940, and his six month's salary, which he will receive in a lump sum, will commence as from that date.

John Smith plans to leave in the opposite direction i.e. for England, via New York, on November 23rd. Perhaps you will see him. I have assured him that I will do all that I can to foster the general co-operation that now exists between the Smiths and us, and will keep Mr. Davies, who is carrying on for him at Helvetia, and Heussler, who is carrying on for him at Patzulin, in constant touch with our work.

It is now planned to give a good-will cocktail party, which will be graced by the presence of Dr. and Mrs. Popenoe, either in the Palace Hotel or the Grace Inn on the Friday afternoon of the Fair. I wish that you and Mr. Perkins were going to be here to join in the celebration!

Very truly yours,

F. Rosengarten Jr.

F. Rosengarten Jr.

COPY

Finca El Naranjo,
November 5, 1940,

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

I am pleased to report that the Krukoff seedlings from Washington arrived safely, are in first class condition, and at present are being transplanted to the nursery area just above the seed-beds. I acknowledge receipt of your letter of Oct. 25, announcing their arrival. These are by far the biggest of the Krukoff group that we have seen here, and it should be most interesting to note their development.

Also thank you for the prints for the fair which arrived safely. I am having them framed as suggested and am also having ten of Dr. Popenoe's photos enlarged to 11" by 11", in order to add a little more life and effect to the exhibition. Don Mariano has suggested that I make a 20 minute chat every day during the fair, at 10 A.M. This is something that will require a bit of thought.

The cocktail party that was mentioned previously will be given on Tuesday Nov. 19, at 6 P.M. in the back of the Palace Hotel. About 150 people are going to be invited including Gov't. Officials, members of the American and British Legations and their families, Cinchona Co-operators, Cinchona friends and others.

The nursery area here is coming along in satisfactory fashion: the leveling-off has been almost completed. As soon as we make an accurate check of the available space, I will inform you. I plan to take Benitez to Patzulín on Thursday so that he can get some more ideas about the roofing to be used.

Don Pancho, Benitez and I plan to talk with the Intendente at Chicacao on Thursday, in an effort to get him to give us some support on the Chicacao-Castaños road. Although trucks working for us harmed this road originally, some heavily-laden banana trucks recently raised further havoc with it. It looks as if we will have to bear the burden of most of this expense, however, as most of the neighbors have no money and very little labor, and also it is said that this Intendente is not always the most accomodating fellow in the world.

I talked with Hoehn to-day, and he gave me the encouraging news that Mr. Griesing of Nottebohm has consented to Hoehn's coming to us on December 1, instead of December 16th, in that a new man is going to be obtained for Castaños earlier than had been anticipated.

Very truly yours,

F. Rosengarten Jr.
F. Rosengarten Jr.

Copy

Finca El Naranjo,
November 7, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

I had a long talk with Benitez and his wife this afternoon, and we have come to a complete understanding.

When Benitez heard that Hoehn was coming, he thought that perhaps he, Benitez, was going to get fired. Benitez was also hurt in that he felt that Hoehn was being put in above him, despite the seven long and loyal years of service that he had given Merck. And these jolts, on top of his other worries, were making him most unhappy, if not resentful.

After hearing his grievances, I assured him that it was not a case of Hoehn being put in above him at all; that Hoehn was going to be in charge of the Administration of the finca itself, with responsibility for the details attached to it, and that Benitez was to be in charge of the important Cinchona field work; that Benitez and Hoehn were to work together. At this point, to make my argument stronger, I said that starting on the first of December we would give Benitez a salary of 150 dollars a month, the same salary that Hoehn will get. (This should not be too much in view of Benitez' fundamental value to us).

We hashed over the difficulties that have confronted us during the past few weeks, following the simultaneous departure of Franke and Dr. Popenoe, we discussed the resulting friction, and now we understand each other perfectly.

I also told Benitez that we would pay the monthly \$15 that his servants cost him (as Franke had previously told him that we would do this); I also told him that he would be re-imbursed for his furniture, as evidently you and Mr. Perkins had told him this about a year ago.

He says that now he is fully satisfied with the set-up, and both Mr. & Mrs. Benitez are sure that they will get along very well with the Hoehns. Mrs. Benitez, by the way, is much more cheerful now.

Benitez seems to understand fully that it was no dissatisfaction with his work that caused us to get Hoehn, but was a desire on our part to strengthen our staff generally, and to allow Benitez uninterrupted time for his Cinchona activity.

Consequently, I can frankly inform you that for the first time I feel that the personnel situation at Naranjo is in first class condition, and indeed we should have an excellent staff with which to accomplish the large amount of work that confronts us in the future: in truth, however, until this personnel situation was more definitely settled, we were in a very weak position to accomplish anything.

I hope that you approve of my commitments as far as Benitez is concerned, and I can assure you that I am greatly relieved to see this situation resolve itself so readily.

Very truly yours,

F. Rosengarten Jr.
F. Rosengarten Jr.

November 8, 1940

Mr. Frederic Rosengarten, Jr.
Apartado postal numero 284
Guatemala City
Guatemala, C. A.

Dear Mr. Rosengarten:

I have quite an accumulation of your letters and reports to answer, all of which have been read with a great deal of interest by both Mr. Perkins and myself.

Mr. Pennock and his wife left on November 7th via the Calamares and should be in Guatemala by the middle of next week. He is going to try to get accommodations at the Palace Hotel, but whether or not he will be successful I do not know. He has signed a contract with us covering two years of employment in Guatemala, and his contract relieves him of any administrative responsibility and states that he is expected to devote his entire time to research and development, not only at Naranjo but with those who are cooperating with us on this project. The contract further states, however, that work with others will only be by consent from you or from Merck & Co. Inc. This has been put in so that Naranjo has first call on his time. I doubt whether there ever will be any reason for exercising this control. I understand Mr. Pennock plans to establish his wife in the City, but it is thoroughly understood that he is to spend his time out in the country and not in Guatemala City.

I acknowledge your letter of October 28th concerning Jacaratia at Panama. In this letter you also speak of Owen Smith's grafting which has been done in a field position. This is of interest and should be followed up.

In many of your letters and also in those from Dr. Popenoe, interesting and vital

Mr. Frederic Rosengarten, Jr.

-2-

November 8, 1940

research problems have been discussed. I would certainly suggest that you show your file to Mr. Pennock, covering these. I have talked to him about some of the problems but I believe it wise for you to review them with him again.

I am writing to Dr. Wellman, the plant pathologist suggested by Dr. Popenoe, and will try to make arrangements to have him come to Guatemala for a short period in order to look at our plants from a disease standpoint.

I am sorry to hear about the trouble between Don Pancho and Benitez. They are both valuable men. Of the two Benitez, in my opinion, is the more valuable. We should make it very plain to Benitez that we are relying on him heavily. He may feel that as long as we have employed Hoehn that he is not wanted. This is far from the case. There is certainly a place in the organization for both of them. I do not know the status of Benitez's family troubles. Is his wife planning to stay on at Naranjo? What arrangements have been made to house Hoehn and his family? If Benitez's wife is not satisfied at Naranjo, had you considered allowing Hoehn to use his cottage? In this connection I note the correspondence with Nottebohn and would suggest that we allow Hoehn to act in an advisory capacity at Castanos if Nottebohn so desires. I would say this could be done for a period of three months provided it is needed by them. I note the contract with Hoehn dated October 23rd and this is satisfactory.

In your letter of the 24th you speak of sending me some photographs by air mail. These have not been received.

To date we have received no acknowledgement of the material sent for the Fair. I hope that this was received in good order.

Thanks so much for the invitation contained in your letter of the 29th to attend a cocktail party on the Friday afternoon of the Fair. Both Mr. Perkins and I would like nothing better than to be present. The only thing that I can suggest is that at some later date we will take a rain check on that invitation.

Mr. Frederic Rosengarten, Jr. -3- November 8, 1940

I talked with Mr. Perkins yesterday about visiting Guatemala and although he cannot tell definitely, he is planning to come down the last part of November. He naturally wants to see you and the Plantation and also Dr. Popenoe, before he leaves.

Please tell John Smith to be sure and get in touch with me when he arrives in New York. It is possible that Mr. Perkins may not be here if he carries out his plans to be in Guatemala the last of November.

Have you been able to get any delivery date on the two tons of Erythrina Seeds that the Pettersens are collecting? Without placing a definite order beyond the two tons, could you possibly have an estimate made of what quantities might be available up to March 1941?

Some time ago you asked me about Cinchona prices. Roughly Netherland Indies Bark is worth about 40¢ to 42¢ lb., whereas South and Central American bark is worth the following:

Guatemala	9¢ to 10¢ lb.
Colombia	10¢ to 11¢ lb.
Ecuador	10¢ to 11¢ lb.
Nicaraguan	10¢ to 11¢ lb.

We have no figures on Bolivian Bark, but I would judge from assays that I have seen that it would probably be somewhere between the Dutch and the American prices.

I did not receive a copy of the Helmrich contract directly from you but I did receive from Mr. Sanchez a Spanish copy attached to his letter of October 25th. I note that you have a copy of this letter. Apparently there is a misunderstanding on the part of Mr. Sanchez. As we have translated the Spanish paragraph in his letter he interpreted Ledger to be a book of records and not a variety of Cinchona. Will you please straighten him out on this. As we have interpreted the contract we believe it to cover the situation very well. We would suggest, however, that one more paragraph be added in which it is specified that seeds be collected according to instructions issued by Experimental Plantations Inc. This paragraph naturally will cover time of collection, care and storage.

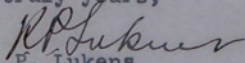
Mr. Pennock requested some chemicals to be used in his work at Naranjo. These are being forwarded

Mr. Frederic Rosengarten, Jr. -4- November 8, 1940

to Mr. Gibson and I assume you will receive notice
from him upon arrival.

By this time you have undoubtedly
received the plants shipped from Washington. I am
anxious to know how these arrived.

Very truly yours,


R. F. Lukens

RPL:CS

cc Dr. Popenoe

copy

Finca El Naranjo, Nov. 11, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

Enclosed please find the Meteorological Record for the month of October 1940.

I also enclose a summary of the grafting activities at Zapote in 1940, up to the month of October.

Regarding Zapote, as you know Mr. Pettersen is seriously considering the idea of leaving Guatemala in the near future.

While undoubtedly there is a lot of "junk" at Zapote, nevertheless there unquestionably is some good material including (1) Those grafts which survive of the 11,675 made this year that are over 5%, (2) the untested seedling trees from Washington in Plantation #2, (which were too young this year to be analyzed accurately), (3) those Krukoff seedlings which survived, and (4) certain hitherto untested trees in Plantation #1 which might prove valuable.

Yesterday I walked with Benitez through Esterlina and Los Angeles. In Esterlina it is interesting to note that they are building a new house. I wonder where the money is coming from for this residence and why? Perhaps for our benefit?

Benitez thinks highly of the Esterlina land for Cinchona; although it is said that there is "montafia", or "virgin land" in Esterlina, as far as we were able to see, this "virgin land" for the most part consisted of unplantable barrancos; but there still remains perhaps a caballeria of relatively flat, irrigable cafetal, that might be highly valuable to us one day for nursery or field plantings.

If we were going to acquire more land, it would seem to be distinctly advantageous to consider Esterlina rather than Monterey, Zapote, because of proximity to Naranjo, soil conditions etc. But at the same time, it seems to me it would be a pity to allow the best material at the latter place go to rot, or drift out of our hands completely.

Very truly yours,

F. Rosengarten Jr.

F. Rosengarten Jr.

Apartado 284, Guatemala City.
November 14, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

I have just returned from a week at Naranjo, from where Benitez and I went to San Pedro to sow the second bed (36' by 5') for the Herreras, using the 100 series. We also planted out ten grafts (low content from Zapote) as an experiment with the soil and climatic conditions.

It is interesting to note that germination is just starting on the first bed which was sown on October 14th. (i.e. 30 days ago) The altitude of 5000 ft. seems to have retarded germination, which phenomenon confirms the experience of Benitez at Antigua (also 5000 ft.) where germination took place at 45 days.

Mr. and Mrs. Pennock arrived safely, and I saw them for the first time last night, when we had a pleasant talk.

The prints for the Fair arrived safely, and I have had them framed as suggested. This morning I went out to the Fair Grounds to supervise the setting up of the booth. Unfortunately Don Mariano suggested, or rather insisted that we cut the height down to 6 ft., as we were too high in comparison to the other exhibits. This is going to spoil our exhibit a bit, but I will do the best I can to make the best showing possible under the circumstances, (which is the only thing I can do.)

Regarding the collection of *Erithryna* seeds, in my letter to you of Oct. 20 from Naranjo, I informed you that Mr. Pettersen stated to me at that time that he would have no difficulty in collecting two tons, but that he could do this by June, not by March, and that he would not consider an offer of less than 20 cents a pound. I asked you to inform me at that time whether I should seek other sources of supply, or make an agreement with Pettersen as stated above, but I have not as yet received a reply from you regarding this, so naturally I have put in no definite order. Will you please advise me as soon as possible re. this order?

Benitez is now in much better health and is getting along very well again with everybody. We had a long talk again the other day the kernel of which was as follows: the coming of Hoehn pleases and yet displeases Benitez. It pleases him because he realizes that Hoehn is a first-rate man and should advance the project; it displeases him because he now feels that he might suddenly lose his job (in that he admits that with Hoehn on hand he, Benitez is not as absolutely essential to the Cinchona as before).

Benitez said that he would feel much more comfortable, therefore, with a contract for five or ten years. (Which would be a protection for him against suddenly being thrown out in the cold). I told him that I thought a contract for ten years was probably out of the question, but that one for five years might be possible.

Indeed I think that a contract of five years for Benitez would be a very sound commitment on our part.

After all, he alone and certainly not Franke was responsible for bringing the plants, seed-beds etc. up to the state in which they are at present. And as I see it, for the next five years at least, Benitez' services will continue to be of the utmost value to us in the seed-bed and nursery work.

And also important, it would give Benitez a peace of mind to enable him to co-operate to the utmost in training young boys to graft etc., and also in instructing Hoehn re. the Cinchona. Without some assurance as to his future, Benitez naturally would feel a bit reticent regarding these two latter duties of his which frankly are most important (and which he himself told me he would do much more willingly if he were protected by a contract).

So with a five year contract, Benitez could without personal worries (and he works 100% better in this frame of mind) pursue his seedbeds and nursery activity, as well as give more enthusiastic training to others.

Incidentally, we are going to have to start early in 1941 with the opening up of field areas to receive the Krukoff seedlings in 1942. This will be an absolutely tremendous job, and it would be impossible (as he himself says) to handle this job properly, and at the same time do justice to the seedbeds and nurseries.

So I propose to put Hoehn in charge of the opening up of field areas (which task he should be able to accomplish very ably due to his coffee training), and have Benitez in charge of seedbeds and nurseries development.

I mentioned this plan to Benitez and he thinks highly of it. He says now that it is essential for him to be near the seedbeds and nurseries all the time.

So I really think that to get the most out of Benitez (which is really very much indeed) that we should give him a five year contract as he desires (say at 150 a month). Sanchez, of course can arrange certain clauses in the contract to protect us against adversities.

Then we not only would have a spirit of friendly co-operation among all at Naranjo (for Benitez says that with a contract he wouldn't care who came or went as Administrator as he would realize that any such change wouldn't affect his future) but we also would get, I firmly believe, a great deal more work done more efficiently.

Please advise me soon re. this contract, and I certainly hope that you will approve, as said contract would advance the work more down here than it is possible for you at Rahway fully to appreciate.

Very truly yours,

F. Rosengarten Jr.

November 20, 1940

Mr. Frederic Rosengarten, Jr.
Apartado postal numero 284
Guatemala City
Guatemala, C. A.

Dear Mr. Rosengarten:

I recently received your letters of November 11th and 14th.

I wish also to thank you for the detailed maps of the Cinchona plantings. These were received in good shape and I certainly appreciate the enormous amount of work represented by these plans. I feel, however, that the work is justified.

In your letter of the 14th you speak of the fact that Mr. Petterson could not collect two tons of Pito Seeds by March but would have to have until June. As far as the price is concerned it was agreed, as I remember the case, to pay 20¢ per lb. up until March. After that time it was thought that 15¢ per lb. was sufficient. As you may know, Owen Smith is interested in the collection also; in fact I have a letter from him dated November 13th which I am enclosing. After noting will you please return this to me. I have no objection to placing part of the two tons with Smith provided you have not already committed yourself as far as Zapote is concerned. Please be sure, however, that the seeds are the right variety. I have written to Owen Smith and told him that you will talk to him about the Pito Seeds.

I note the part of your letter concerning the contract for Benitez and frankly my reaction to this is "no", at least as far as any five year contract is concerned. I am ~~xxxx~~ not so sure that Benitez should not be walked on just a bit. Benitez should realize by this time that he is working for a reliable concern and that of all the men who have worked down there for us he is the only one left. I would be perfectly willing to give him a contract for a year, the same as we have given Hoehn, and I do not mind telling him verbally that as long as he takes excellent care of his job,

Mr. Frederic Rosengarten, Jr. -2-

Nov. 20, 1940

that his position is secure, provided of course that we continue our Cinchona work in Guatemala, and it seems a very remote possibility that we will not.

I think your proposed distribution of the work of Hoehn and Benitez is sound, i. e. that Benitez be largely responsible for the nurseries and seed beds and that Hoehn take the responsibility for field positions, etc.

I believe your letter of the 11th requires little comment.

I think we all agree that if and when we need the land, Esterlina is much more desirable than Monte Rey.

As for the plantings at Zapote we have no control over these other than provided in the contract. Should Zapote fall into other hands I have always felt that we could cooperate with them perhaps in the same manner as has been done with others in Guatemala.

Very truly yours,

R. P.  Perkins

RPL:CS

cc Mr. Perkins
Dr. Popenoe ✓

Finca El Naranjo,
November 28, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

Enclosed please find the bond for Hoehn, filled out as requested. I think it advisable to wait until Mr. Gibson visits us again in the end of December, before making any changes in the present accounting set-up. In the meantime, Hoehn can familiarize himself with the routine at El Naranjo. Hoehn will move up here on December 1.

Construction. The new house is coming along well, and it is hoped that it will be finished by the end of December.

The Garage should be finished in a week.
The new stable should be finished in

about a month.

We now have 36 ranchos and a galera. A 37th rancho will be built beside the stable for the stable boy.

A large glorified rancho of 31' by 20' will be built for Victor Morales, the major domo, beside the rancheria. Victor at present feeds the second class mess in a smoky rancho of the regular mozo type; he is a very hard-working, hustling fellow and certainly deserves to live on a par somewhat above the ordinary mozo.

I am sorry that you don't approve of the suggested contract for Benitez. How about a contract for 3 years? Benitez is a most valuable man to us not only for his gardening ability but also for the instructions that he is in a position to give to Hoehn and the young agricultural school boys. Objectively speaking, he should do this work more enthusiastically on a long term rather than a month to month basis. Also he would like to have the feeling of security as he would like to buy a second hand car for himself and his wife, and also like to have enough funds salted away to be able to send his wife away somewhere during the gloomiest months of the rainy season here. I really think it would be to the advantage of our work here to give Benitez a 3 yr contract (at \$150 a month) duly protecting ourselves to the utmost against unforeseen eventualities. I don't like to bother you about this matter again, but what I am trying to do, frankly, among other things, is to get things running so smoothly down here that there will be the minimum opportunity for personal misunderstandings etc. to interfere with the work ahead of us.

Dr. Popenoe, Mr. Pennock and I hope to visit Cobán on Dec. 9th in order to (1) Get Helmrich to sign our contract, (2) Sample the most promising of the "Cobán Ledgers" there in the hope that we may run across another sturdy high-yielding type like Helvetia 2492, and (3) enable Mr. Pennock to familiarize himself with that region.

Then the following week we hope to make a trip to the Quiché with the Herreras. They are definitely interested in Cinchona at present, and it would certainly be a great boost to the plan of a large scale development of Cinchona in Guatemala in the shortest possible time to have them become active large scale co-operators.

The Lower Nursery at Naranjo is in very good shape, thanks to Benitez, and we have commenced the transplanting of the larger Krukoff seedlings. A pipe-line has been laid to this area from the tunnel.

Owen Smith informs us that he has already moved out of Beds 1 and 2 at Los Andes all the seedlings to which he is entitled. Consequently Mr. Pennock, Benitez and I are going to Panama tomorrow to make definite arrangements regarding the commencement of transplanting from Los Andes to Naranjo.

In a chat Dr. Popenoe, Mr. Pennock and I had two days ago, we came to the conclusion that it would be a sound plan to spend 30 to 50 dollars at Zapote to fertilize the most valuable African Ledgers, Original Ledgers etc. in an effort to keep these plants alive until such a time as we can get cuttings from the most valuable of them. Otherwise, if we allow them simply to pass away, we might lose out on some possibly most worthwhile clones. Do you approve?

I had a talk with Mr. Pennock here to-day, and the arrangement we have between us is this: Benitez is to be in charge of the work in the seed-beds and nursery areas; Hoehn is to be Administrator of the finca, and will also be in charge of the opening up of new areas, along with his duties as Administrator. Mr. Pennock will have no administrative duties whatsoever, (at present) but will give technical advice to Benitez, and will also carry out many cinchona experiments on a moderate scale on the side, with the help of Benitez, and with an eye always to our future development. He will also be working all the time, of course, on the basic technical problems that confront us, such as the red-mottling disease, a better method of grafting etc., as well as giving advice to our co-operators. Mr. Pennock, Benitez and I have talked this over, and we all will do our best to co-operate with one another to the utmost, along with Hoehn, in an effort to develop fast but effectively.

As far as the new house is concerned: I gave Mr. Pennock his choice of apartments this afternoon, and he has chosen the 2 rooms and bath on the 2nd floor north-west side of the house; Mr. Hamself and his wife; Mr. and Mrs. Hoehn and child will then have the 2 rooms and bath on the 2nd floor south-east side. Hartleben will live in the single room on the ground floor that was going to be the corn store-room originally. And I will live in the other bed-room on the ground floor (which will have 2 beds). If one or two guests come, I will move over to the old building to make room for them; if 3 guests come, Hartleben will move over also; if 4 guests come, the 4th guest can sleep in one of the 2 bed-rooms which the Pennocks will occupy. If a fifth guest arrives, he can sleep over in the old building with Hartleben and me, where a room with 3 beds will always be kept free. This is the tentative plan and may be slightly changed.

Thanks to Victor, the major-domo, who called it to my attention, we have discovered a new portion of Naranjo just above the Esterlina boundary and just below the Esterlina spring, which is almost flat. There is enough land in this region to make it definitely worthwhile as far as nurseries are concerned, as there will be practically no terracing work to be done. Consequently we are going to open up this territory as soon as possible, lay pipe to it from the Esterlina Spring, and prepare what should prove to be a very useful nursery area there.

Very truly yours,

F. R. Jr.

F. Rosengarten Jr.

P.S. Following the promise of a raise which Dr. Popenoe, Gibson and I had given to Hartleben previously, provided that he should carry out his work at Naranjo in satisfactory fashion, I have informed Hartleben that starting on Jan. 1, 1940, his salary will be \$45 a month instead of \$35. Gibson and I feel that Hartleben has done a very creditable job indeed since he has taken on his new responsibilities. (Mr. Gibson has given me very helpful advice re. this and other finca matters).

Main Office:
RAHWAY, N.J.
NEW YORK
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ST. LOUIS
4528 S. Broadway

MERCK & CO.
INC.
MANUFACTURING CHEMISTS

Cable Address:
MERCK NEWYORK

Works:
RAHWAY, N.J.
PHILADELPHIA

In Canada:
MERCK & CO. Limited
MONTREAL
TORONTO

December 6, 1940

Mr. Frederic Rosengarten, Jr.
Apartado postal numero 284
Guatemala City
Guatemala, C. A.

PLEASE REPLY TO
RAHWAY, N. J.

Dear Fritz:

I have two letters of yours to acknowledge, one of November 26 and one of November 28, 1940. The sample of Alcotan has been received and will be passed along to the Research. I judge from your letter of the 26th that the Fair was highly successful. What are you going to do with the "Gold Metal"?

As you know, we have been trying to obtain for you fertilizers for experimental purposes. One lot of Potassium Sulfate has already been shipped and we have ready for shipment about one ton of Ammonium Sulfate and about 500 lbs. of Ammonium Phosphate. These should go forward shortly.

Receipt is acknowledged of the bond for Hoehn.

Referring again to the contract for Benitez, I still see no good reason why he should be granted a contract beyond one year's time.

With regard to the fertilization of trees at Zapote, I believe this is all right. I would suggest, however, that no action be taken until after the matter has been thoroughly discussed with Mr. Pettersen. As you know, these trees belong entirely to Mr. Pettersen and there is always the chance of damage if the fertilization is not done correctly.

I am very much surprised by one part of your letter of November 28th, concerning the housing arrangements at the plantation. I did not know that Pennock was planning to take his wife to Naranjo. I am definitely of the opinion that she will not be satisfied out there. Please do not make any too definite arrangements for housing both the Pennock family and the Hoehn family in the same building.

Mr. Frederic Rosengarten, Jr.
Guatemala, C. A.

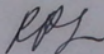
December 6, 1940
Page 2

I am sure sooner or later this will lead to trouble. It may be necessary for you to make some tentative arrangements in this respect, but do not commit yourself too far. Mr. Perkins expects to be down shortly after the first of the year and he will discuss this more fully with you. Probably the only satisfactory answer will be the construction of another house.

With regard to Hartleben's salary, we ^{will} ~~would~~ be guided about what you and Mr. Gibson think of his value.

With best regards,

Very truly yours,



R. P. Lukens

RPL:DLC

cc: Mr. Perkins
Dr. Popenoe

Finca El Naranjo,
December 13, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey.

Dear Mr. Lukens;

Dr. Popenoe, Mr. Pennock and I have just returned from Cobán. The Original Ledgers at "Samac" appear to be in very good condition. There are 90 of them alive and therefore eligible to yield seed and cuttings.

We offered the contract to Helmrich who seemed very satisfied with its contents with the exception of the last clause. We had made a sort of blanket clause here to protect ourselves against the possibility of Helmrich's death, expropriation or sale of the property etc. Helmrich objected to this clause on the grounds that (1) It might impede him should he desire to sell Samac during the next three years, and (2) In case he should die, he would prefer not to leave obligations pending on his property.

Consequently we altered the contract to suit him: now the final clause reads that in case of the death of Helmrich, sale of the property etc. the new owner will be obliged to give us seeds and cuttings only until the first of January of the following year, provided of course that we had already paid our \$200 for the particular year in which the death or sale might occur, and that it would be up to us, therefore, to make a satisfactory arrangement with the new owner before said date. Actually this should not hurt us: while Helmrich lives at Samac, we are sure of the best possible co-operation; if the property changes hands, it would have been necessary for us anyway to make arrangements with the new owner. We plan to visit Samac at least four times a year for the next three years, to check on developments and give instructions.

We sampled all the remaining "Coban Ledgers" in the field at Samac, and also the one Original Ledger again which gave a low analysis in August. I will send these samples along to you by Air Express as soon as they are dry, along with more details.

I have just sent Helmrich his first cheque for \$200 which sum will cover the seed collection for the year 1941. We will pay him 10 cents for every cutting we take. We plan to take cuttings from any "Coban Ledgers" in the field which give promising results (if any) and then cut down all the "Coban Ledgers" in the field, leaving only the purest of Original Ledgers for the source of seed in 1942 and 1943. The seed which we collect ~~in February~~ 1941 will probably not be absolutely pure, but for our own purposes we plan to collect seed from the three rows of Original Ledgers furthest removed from the "Coban Ledgers", sow these, and then at the end of six months rogue out any hybrid types.

When we return to Samac in February, we plan to collect seed and also to take cuttings from not only any promising ~~"Coban Ledgers"~~ but also from each of the Original Ledgers ^{existing} ~~we have from each of the Original Ledgers, such~~ as such "Coban Ledgers" but also from each of the Original Ledgers ^{so} ~~that we may be sure of having at Naranjo representative grafts of each~~

high yielding type at Samac. It would be convenient if we could receive the results of the analyses of the samples which you will shortly have on hand at Rahway, therefore, by the beginning of February.

We then visited the finca Sachamach of W. Dieseldorff; we were very impressed by the soil and climatic conditions on this finca, and plan to approach Dieseldorff in February regarding the possibility of a cinchona experiment on this spot. On the whole, we feel that there are definite possibilities for Cinchona in the region of Cobán; possibly even Ledger seedlings in certain choice locations. The soil is more clay-like in formation than the Naranja soils, but the constant rainfall in this district appears to be advantageous. We all agree that the healthiest Ledgers grown from seed in Guatemala are to be found at Samac. It is now up to us to make further experiments in this district, with an eye to future Cinchona land. Dr. Popenoe feels that the regions of San Cristobal and Tactic, both near Cobán, are also worthy of future consideration on our part.

(2) The new house at Naranja is coming along well; the chief delay at present will be with the painting job, which we are going to start on as soon as possible. It is still hoped that we can move into the new house during the first week of January.

(3) The transplanting of the Krukoff seedlings is progressing nicely. To date, we have transplanted 86,000 seedlings, including approximately 3800 seedlings received from Washington, and 17,000 received from Panamá, into the "Lower Nursery". Benitez is doing some fine work here.

(4) After a few chats with the Intendente in Chicacao, we have persuaded him that certain of our neighbors should help us in the repairing of the road between Chicacao and Castañeros, which is at present in terrible shape. The Intendente has been very co-operative, and consequently there are at this time 20 mozos from Naranja, and some 13 mozos of the neighbors working on this road in an effort to put it in first class condition. The work is being done under supervision from Naranja.

(5) Hoehn was successful in contacting the new labor agent in Huehuetenango, so that starting in January 1941, we should get a constant supply of willing Indians, who will be glad to work for 12 cents a day, instead of 15 cents, and who will be contracted by a labor agent receiving a more modest commission than our present agents. This should be additionally advantageous in that we should now be in a better position to increase our number of permanent rancheros, as these will still be paid 15 cents, making the job of being a permanent ranchero at Naranja more attractive, comparatively speaking. Sanchez is at present arranging a Nombramiento for this agent, so that the latter ~~regarding the certification~~ regarding the certification of the best trees at Zapote. Mr. Petterson will be very glad to do this at his expense, with us giving him the advice as to its application. Consequently, I have placed this matter in Mr. Pennock's hands.

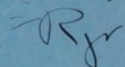
(7) Regarding the housing arrangements for the new house naturally they are to a certain degree tentative; it is not certain as yet whether Mrs. Pennock will live in the city or at Naranja; I am doing my best to make everybody as contented as possible under the existing conditions. If Mr. Perkins has any suggestions regarding

this matter, I will be very glad to hear them in January, when I am looking forward to seeing him.

(8) I enclose a new form for the Nursery Records that I drew up, and which has been approved by Dr. Popenoe. This record will be a connecting link between the seed-bed records and the field records. By practical experience we found that the "Planting Record" we had was too small to handle the numerous changes and separate distinct movings that invariably result with the seedlings.

(9) Commencing as of December 31, 1940, I have arranged with Gibson to pay me half my salary every month, i.e. \$100, here in Guatemala. Consequently will you please notify the Accounting Dept. to send \$100 instead of \$200 to the Germantown Trust Co., Chestnut Hill, Penna., as from that date.

Very truly yours,



F. Rosengarten Jr.

Apartado 284, Guatemala.
December 17, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey.

Dear Mr. Lukens:

(1) I am sending off by Air Express to-day two separate packages; in the first are to be found 30 bark samples taken recently at Coban. 28 of these are from the Finca Samac, and include 27 so-called Coban Ledgers, and one Original Ledger (S 86) which tree gave a low analysis in August.

2 samples, Sachamach 1, and Sachamach 2, are from the 2 Original Old Coban Ledgers at Finca Sachamach of W. Dieseldorff. It is estimated that these two trees are about 50 years of age.

The following samples have been sent in Package #1:

S 86	S 117	S 127
S 104	S 118	S 128
S 105	S 119	S 130
S 107	S 120	S 131
S 108	S 121	S 132
S 109	S 122	S 134
S 110	S 123	S 135
S 111	S 124	S 138
S 113	S 125	Sachamach 1
S 115	S 126	Sachamach 2

In the second Package, please find the following:

2 samples of Gliricidia sepium.

1 sample of Casimiroa edulis.

2 samples of Ichthyometia grandifolia. (an Insecticide well known in Guatemala.)

These samples in Package #2 were collected through the co-operation of Don Mariano Pacheco and Sr. Ippisch.

(2) Last Friday, Mr. Pennock went down to Zacapa and collected samples of Haplophyton cnicoidium as had been requested. Also some seeds of Karwinskia. These samples are being dried at present and will be sent up at the earliest opportunity.

(3) Dr. Popence, Mr. Pennock and I had a talk yesterday with Carlos and Rafael Herreras; frankly, they are very much interested in Cinchona. Consequently, we have told them that if they send a boy over to Naranjo, we will see to it that he gets some training so that he may be in a better position to carry on Cinchona work for the Herreras.

The Herreras, although it seems that they don't at present have a property suitable in Guatemala for Cinchona, are very interested in buying one; this they will probably do in the near future, according to suggestions made by Dr. Popence after he has studied the property situation on the West Coast more fully.

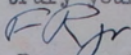
I have told the Herreras that we would like to give them the utmost co-operative support, just as we do with Gordon Smith; that is, a combination of the best technical advice which we can offer, plus presentation of seeds, cuttings etc. when we feel

it is possible.

We feel that the addition of ~~the~~ Herreras as co-operators will strengthen this project tremendously.

(4) From now on, will you please instead of sending me my correspondence to Apartado 284 by Air Mail, send it to me at El Naranjo by Air Mail, at the same time sending copies of all letters to Apartado 284 by regular mail.

Very truly yours,


F. Rosegarten Jr.

December 24, 1940

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

Again I have to ask your indulgence for not having answered your correspondence more promptly. It has been necessary for me to be away from the plant a great deal lately.

Receipt is acknowledged of your letter of December 6, 1940, referring to various botanical samples. The samples have since been received by air express and have been forwarded to the Research Department for investigation.

Attached to your letter was a note from C. Griesing and I am glad to note that our relations with them are very friendly.

Your letter of December 2nd is acknowledged, attached to which was the article on Cinchona, written by Dr. Popenoe. This letter also brings up the question of the allowance to Hoehn of 5 cents a kilometer for the use of his car on company business. This allowance is approved.

Referring to your letter of December 13, 1940, the first part of which refers to the contract with Helmrich, I see no reason why the contract should not be altered to suit him.

At the present writing we have not received the additional samples of Cinchona Bark from Coban, but as soon as they are received, we will start immediately on the analyses.

I am heartily in accord with trying additional areas in the Coban District for the experimental raising of Cinchona. I think the idea an excellent one.

I have been informed that the fertilizer

Mr. Frederic Rosengarten, Jr.

December 24, 1940

shipments going to Guatemala from the States have been delayed due to the fact that it is necessary on account of an embargo, to get export permits. I believe we will get these all right but it simply delays the shipment somewhat. Do you suppose that you could pick up some quantities in Guatemala so that you can proceed with your work pending the arrival of the goods from the States?

I note the nursery record that you propose to keep and as far as I can see it is satisfactory. We all value Dr. Popenoe's opinion very highly in matters of this kind and if he is satisfied it must be workable.

With regard to item 9 appearing on page 3 of your letter of the 13th, I have talked with Mr. Gage about this and he in turn has instructed Mr. Gibson so that it will be carried out according to your wishes.

I have noted Owen Smith's letter of December 12th, which I am returning as requested by you. I can add nothing to the original Krukoff instructions which stated that the variety we desire is the only variety that occurs in the departments of Escuintla, Solola, Retalhuleu, Mazatenango and Quetzaltenango. As for the samples submitted by the Smiths some of them were especially good, the best samples being Nos. 1 and 4 submitted by Owen Smith which contained about 2%. Sample No. 6 submitted by Owen Smith was of average value, i. e. about 1-1/2%. Of the John Smith samples No. 1 was of average value, i. e. 1-1/2%. The others I understand were somewhat inferior. I hope that this will be sufficient to guide the Smiths in their selection of seeds.

I have also to acknowledge your letter of December 17th concerning additional samples from Finca Samac. These will be analyzed as soon as received.

Your instructions concerning your mail have been noted and we will act accordingly.

With best regards, I am

Very truly yours,


R. P. Lukens

enc.

cc Apartado 284, regular mail

cc Mr. Perkins ✓
Dr. Popenoe ✓

December 24, 1940.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey, U.S.A.

Dear Mr. Lukens:

I wish to report the following developments:

(1) Krukoff Seedlings. 134,475 have now been transplanted to the Lower Nursery, and this work is progressing in a most satisfactory fashion.

(2) In the past three days Mr. Pennock and I have observed the seedbeds at San Pedro, and the Nursery activity at Panamá, Mocá, Helvetia and Patzulín.

At San Pedro the germination is coming along very slowly indeed. This may possibly be due to the high altitude, the age of the seeds and perhaps the cool temperature and wind.

At Panamá, Owen's seedbeds at Los Andes and his nursery beds at Santa Monica (area named after his wife) are in good condition. Our own seedbeds at Los Andes are also in satisfactory condition; the seedlings are gradually becoming more rugged; #7,494 Krukoff seedlings have been moved so far from Los Andes to Naranjo.

At Mocá many seedlings that formerly were cramped and sickly in appearance, have been transplanted and the change seems to have aided them tremendously.

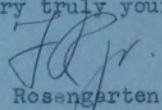
At Helvetia the seedlings are not doing so well. Mr. Pennock has given Lewonski the suggestion that it might be wise to shield the weak seedlings recently transplanted for 2 weeks or so until they are better prepared to withstand light. The Original Ledgers at El Nil appear to have improved in condition during the past six weeks, and many are bearing seed which is being collected and dried.

At Patzulín perhaps the best progress of any of the co-operative locations is to be seen. Heussler has substituted banana shade for Tejamanil in beds where the seedlings are well hardened which seems to be a sound move.

(3) Painting has been commenced on the New House at Naranjo and it is now estimated that the upper floor will be completely finished by January 4th, which means that by the time Mr. & Mrs. Perkins arrive here, unless something unforeseen occurs, comfortable quarters should await them on that floor, and even the odor of the paint should have disappeared by that time.

Happy New Year!

Very truly yours,


F. Rosengarten Jr.

Finca El Naranjo,
January 1, 1941.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

Dr. Popence, Mr. Davis of Helvetia, Dr. Albert Mueller of Venezuela and I visited the Patzulin area on last Sunday, and following this visit, Dr. Popence has recommended to the Herreras the finca San Jose Patzulin, the next finca from Patzulin in the direction of Quezaltenango, as a promising purchase for Cinchonaa cultivation. San Jose Patzulin ranges in elevation between 3500 and 6000 ft., has only one caballeria in coffee and the remaining lands, perhaps 12 or 13 caballerias are virgin forest. It remains to be seen, however, if the owner, whose name is Claudio Lopez, will be willing to sell.

Very truly yours,

F.R. jr.

F. Rosengarten Jr.

January 29, 1941

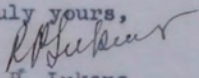
Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

In your letter of December 17, 1940, you referred to 30 bark samples taken at Coban which were being forwarded by air express; 28 of these were from the Finca Samac. Of the 28, 27 were so-called Coban Ledgers and one (S-86) was an original Ledger. Samples 1 and 1 were two original old Coban Ledgers from Finca Sachamach of W. Dieseldorff.

Attached you will find result of the analyses. Most of these samples show very little promise. The samples received were too small in many cases to determine the percentage of Quinine and Cinchonidine separately. We have, therefore, shown combined percentages. Many of the samples weighed from 4 - 10 grams and we would like to have at least 14 grams for assay.

Very truly yours,


R. F. Lukens

RPL:CS

enc.

copy regular mail to
Apartado postal numero 284

cc Mr. Perkins
Dr. Popenoe ✓

MEMO

To MR. R. P. LUKENS
From FACTORY 20

C
O
P
Y

Date 1/28/41

Answering {
Your Memo }

Subject CINCHONA BARK 30 samples from Guatemala received 1/17/41

Sample #1	2.4% Qui. Sulf.,	0.8% Cinchonidine Sulf.
" 2	Less than 2% Qui. & Cde. Sulfates	
" 86	" " 2% " " "	"
" 104	2.1% Qui. Sulf.	1.9% Cde. Sulf.
" 105	Less than 1%	
" 107	" " 1%	
" 108	Traces only	
" 109	2% Qui. & Cde. Sulfates	
" 110	4.3 Qui. & Cde. Sulfates	
" 111	5.0% " " " "	
" 113	Less than 2½% Qui. & Cde. Sulfates	
" 115	3.9% Qui. & Cde. Sulfates	
" 117	2.3% Qui. Sulf., 2.1% Cde. Sulfate	
" 118	Less than 2½% Qui. & Cde. Sulfates	
" 119	" " 2½% " " "	"
" 120	3.0% Qui. Sulf., 2.8% "	"
" 121	Less than 2½% Qui. & Cde. Sulfates	
" 122	2.5% Qui. Sulf., 2.3% "	"
" 123	Less than 2½% Qui. & Cde. Sulfates	
" 124	2.6% Qui. & Cde. Sulfates	
" 125	Less than 2% Qui. & Cde. Sulfates	
" 126	3.8% Qui. & Cde.	"
" 127	Less than 2½% Qui. & Cde.	"
" 128	3.3% Qui. & Cde.	"
" 130	Less than 2½% Qui. & Cde.	"
" 131	" " 2½% " "	"
" 132	2.7% Qui. & Cde. Sulfates	
" 134	Less than 1.1% Qui. & Cde. Sulfates	
" 135	3.8% Qui. & Cde. Sulfates	
" 138	2.6% Qui. & Cde.	"

More than half of these samples contained from 4 to 10 gms. of Bark. The Tartrate obtained from such small quantities of Bark is too little to determine the proportion of Quinine and Cinchonidine by Polariscope reading.

T. H.

Signed (G. Bernardelli)

February 14, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Fritz:

This will probably be a disjointed letter as there are various items that I want to mention.

First of all, I have studied the inventory and it is ^aperfectly grand job. Copies will be made and sent down as you requested.

In going over the general program dated January 20, 1940 (but which should have been 1941), I found two things that it seemed to me needed comment:

- (1) There is no mention other than in point (3) of growing succirubra for grafting. It was my understanding that in addition to planting 50,000 succirubra seeds each month we would also plant a substantial amount of succirubra at about this time for the general grafting campaign in 1942.
- (2) Point (10) I am not wholly clear about, but it was my understanding this was to be done in 1942 as we would not have enough material available in 1941.

I have thought further about the fifteen acres which we talked about with Mr. Pennock. You will remember he wanted some land opened up ahead of time with the forest or coffee trees uprooted to give the soil a chance to air with the hope of eliminating soil bacteria. I still feel that this is a good idea but I question the necessity of opening fifteen acres. If the experiment could be conducted on a smaller area it would seem to me desirable to do it on a smaller area. I suggest this because I am terribly afraid that it is going to be prohibitively expensive to operate in this way and that we may also run the risk of erosion. Nevertheless I think we should make the test for two reasons: first, to find out what it will cost to do it; second, to find out what effect it will have.

I note in the correspondence that the meetings to discuss cinchona are progressing more rapidly than we anticipated. I am writing Mr. Smith a letter, a copy of which I attach, in which I am trying to put the brakes on a little bit.

February 14, 1941

I am also enclosing a copy of the annual report which comes from our plantation in Java and is prepared by our agricultural consultant there. This does not bear directly, of course, on cinchona propagation but will, I think, be interesting from the point of view of the way the Dutch manage the plantation. It also gives some interesting data on weather, et cetera, which may be worthwhile for comparative purposes. I am sending a copy to Dr. Popenoe as I know he would be interested in the figures presented.

I do not find any mention of collecting the Ledger seeds which are at Patzulin or of cleaning out the other varieties of cinchona there. It seems to me this should be done and done soon.

I have talked to Mr. Lukens about the boiler and he thinks that for the present we should retain it at the Finca, making sure that it is properly protected against rust and weather.

To review the building program which you did not list in your notes: While in Guatemala we agreed, subject to conditions which might justify a change:

That we would fix up the building where the present kitchen is as follows:

Make necessary repairs to the building itself, particularly the footings;

Change the present kitchen into a shower and toilet;

Divide the two rooms next to the kitchen into four, providing access by means of a narrow porch on the east to connect to two of these rooms.

Install two or three second-class rooms where the carpenter shop now is, leaving space in the back for a kitchen and mess-room for the second-class mess.

The old stable to be cleaned out for a market. The manure pit and the roof over it to be eliminated to provide better access to the road back to the Finca.

A school to be constructed with living quarters for the school teacher near where the old stable is.

A church to be erected at the bottom of the area between the ranchos after other necessary work has been completed. I will get a sketch of the facade of the church and send it to you.

Mr. Frederic Rosengarten, Jr.

- 3 -

February 14, 1941

An additional residence to be constructed if Mr. and Mrs. Pennock decide to move to the Finca, which I hope very much they will do, the location to be determined by all of you.

The most important item on this list is the construction of the school.

Another item that we discussed was to make sure that some of the better succirubra was left growing at Helvetia for seed for grafting.

I think it was clearly understood, but just for the record - we agreed that Mr. Pennock was to submit complete reports of his work each month, leaving one copy at the Finca for the files there, sending one to Rahway, and sending one to Dr. Popenoe. He was also to prepare a memorandum, copies of which we want and so does Mr. Smith, of what we now think is the best method of grafting, this of course subject to revision as we learn more.

I have asked Mr. Lukens to send you some description of what furniture he thinks should be installed in the laboratory. He has also under consideration what may be best to do about testing the bark in Guatemala. In the meantime, you can continue to send samples as heretofore.

I hope you collected the \$25.00 from the Hotel!

The pictures from Biener arrived in good order. I am having copies of the plant pictures made and will send them to you marked.

Checking over the pictures coming back on the boat, that you and I marked, I found four or five mistakes. I don't know how to straighten that out. Perhaps if you study them again you will be able to find out where we went wrong; or, if you want to, you can send the pictures up here and I will have them corrected.

I hope your trip to Barrillas was successful.

Colonel Ruehl thinks probably the name of the finca near Coban that he was very much interested in, and took me to see in 1938, is "Chivika."

Also enclosed is copy of the itinerary of the trip Colonel Ruehl took through Zona Reina.

I called your mother on our return and told her you were not only alive but in grand shape. Unfortunately your father got some kind of bug and has been laid up. The latest word is that he is coming along

Mr. Frederic Rosengarten, Jr.

- 4 -

February 14, 1941

in grand style but has indefinitely put off the trip to Guatemala,
which is a shame.

Again many thanks for all you did for us!

My best as ever,

Sincerely yours,

GWP/ED
enclosures

Copies to Mr. Lukens and Dr. Popenoe. ✓

Copy by regular mail to Apartado postal numero 284.

February 14, 1941

Mr. Gordon P. Smith
Finca Moca, Guatallon
Guatemala, C. A.

Dear Gordon:

We returned home in grand style and really had a splendid trip. Our flight to Panama was most interesting. The boat trip was pleasant, with interesting people on board, and the boat was perfectly wonderful!

On our return here I found that Joan Cunliffe - who is Lord Cunliffe's wife and who is staying, together with her children, with George Merck during the present uncertainties in Europe - had visited Guatemala with Lord Cunliffe in 1929 and remembered with much pleasure visiting you and also meeting the Armstrongs.

Now to business: I am enclosing more papers than I think you probably want to read but some of them you may find of interest.

Your letter of February 3rd has been received and I see that the arrangements for the cinchona meetings have gone forward. In thinking the matter over I do think they should be approached in a spirit of skepticism and that no one should hesitate to call them off if they prove to be unfruitful. This questioning attitude does not arise from any lack of realization on my part of the important place the meetings could fill if they are successful but simply from my experience of endless meetings around here which sometimes serve a useful purpose in the beginning but which gradually cease to be of value.

I also spoke to Mr. Pennock about preparing a memorandum on grafting. This he will do and, as you understand, of course, it is simply what we now know about grafting and will not represent what we hope to know some day about it. For the time being I have suggested that his monthly reports be sent here. If they prove of interest I will ask him to let you and your group have a copy, but I am not sure yet what they may be and I don't want to bother you with them unless they are worthwhile.

Mr. Gordon P. Smith

-2-

February 14, 1941

We would be very much interested here to learn whether or not you have decided to take on someone to take John's place in the cinchona effort. I do hope it may be possible for you to do this and, as you know, we would be only too glad to have whomever you might decide on come to Naranjo for whatever period that is necessary for him to "pick our brains."

With kindest regards, as ever,

Sincerely yours,

GWP/ED
enclosures

cc Dr. Popenoe ✓
Mr. Lukens
Mr. F. Rosengarten, Jr.

Finca El Naranjo.
February 16, 1941.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

The trip to the zone of Barillas made by Hoehn and me took 14 days instead of the 10 anticipated; despite certain difficulties, however, we managed to transplant 996 seedlings at the finca Maxbal in that zone, and in 9 months or so we should be able to make an interesting comparison of these plants with their brethren at Naranjo. I will send you a detailed account of the trip by regular mail as soon as possible. We were both very favorably impressed with the climatic conditions of the zone, even though it is at present a trip of at least 4 days from Naranjo to Maxbal. (1 in auto, 3 by mule.)

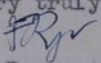
I note that the results of the last Coban samples were far from promising. This was to be expected, however, of these "Coban Ledgers". By the way, before Penmook and I begin the job of sampling the trees in '41, I would appreciate it if you could get together with Mr. Perkins and the chemists and give us a definite minimum sample weight. If the samples we sent from Coban recently were too small, it means that we will probably have to stick to sampling trees with a minimum diameter of 2 inches as we did last year.

As of last week, 299,000 Krukoff seedlings had been transplanted to the Lower Nursery Area.

Work is progressing also on the Nursery Area above the Esterling boundary, and tomorrow Hoehn will start opening up two adjacent areas of about two acres each at 5000 ft. As this area is still in the coffee zone, for the sake of future reference, he will leave one block of roughly 2 acres with shade, and the other block without shade.

With best regards, I am

Very truly yours,


F. Rosengarten Jr.

P.S. As we have come to a temporary pause in the transplanting, Benitez has been given permission to take a few days off the end of this month. He will take his wife and George Jr. to Antigua to see their old friends.

February 17, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

You will note from the copy of the attached letter that we are sending down to Guatemala some sample material to be used in the control of various pests. Please also find some literature concerning larvacide. The goods were ordered at the request of Mr. Pennock. Please advise Mr. Pennock that the apparatus for using the Larvacide is not available at the present time but hope to be able to obtain this later. I understand it can be used manually.

Under separate cover I am sending to you for disposition as you see fit several copies of the article on Cinchona by Dr. Pzn. The original copy is being returned to Dr. Popenoe at Havana.

Mr. Perkins turned over to me the completed inventory recently compiled by you and as soon as copies are available, I will send them down to you.

Your letter of January 31, 1941 is acknowledged. Attached to the letter was an estimate of the total seedlings at Panama. You also bring up the question of whether or not we should turn additional Krukoff seedlings over to Mr. Pettersen. This is perfectly all right and it is agreed that you will give him about 15,000 from those at Los Andes.

Mr. Perkins has been over the situation down in Guatemala with me and I understand he is writing to you covering the decisions made while he was down there and confirming the program to be followed. Dr. Popenoe also wrote to me about the program and I quote from his letters as follows: "I would stick that program on the wall and read it every Saturday night before saying my prayers".

Yours very truly, *RL*
R. P. Lukens

cc regular mail
to Abasco postal number 294

cc Mr. Perkins
Dr. Popenoe

February 24, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

I am sending you herewith, by regular mail, two photostatic copies of the Cinchona Inventory January 1941. One copy is being sent to Dr. Popence, and I am holding the original and a photostatic copy in "ahway. Should you need another copy I can send you down the extra that we have here.

I also wish to acknowledge the receipt of your most interesting report on the trip to Barillas, and have passed it along to Mr. Perkins. I am leaving on a short holiday and have asked Mr. Perkins to write to you about your report.

When Mr. Perkins returned he spoke to me about preparing a sketch covering the equipment and area needed for a small chemical laboratory at the Plantation. I believe it was the idea that when we built a house for Mr. Pennock that this could be incorporated in our plans. This sketch is attached and I believe no further explanation is needed.

With best regards, I am

Very truly yours,

R. P. Perkins

RPL:CS

cc Mr. Perkins
Dr. Popence ✓

Guatemala City,
February 26, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

The first Cinchona Meeting was held yesterday at Moca, and was on the whole felt to be quite a success. You at Rahway will be sent notes regarding this meeting in the near future. There are 2 points, however, that I should like to bring up;

(1) Would you mind getting Dr. Krukoff to make a detailed memo of the method of collecting and drying seed that he used in South America? It was felt that it would be profitable to read such a memo at the next meeting which is scheduled to take place at Naranjo on April 16, 1941.

(2) Most people were of the opinion that further attention might be given to developing a rough test for analyzing Cinchona bark, to be used in Guatemala.

Tomorrow I am going to Coban to collect as much of the remaining seed as possible from the Finca Samac. Pennock made a trip there 2 or 3 weeks ago and found the seed ready to pick. He collected quite a large quantity.

With best regards, I am,

Very truly yours,

F. Rosengarten Jr.
F. Rosengarten Jr.

(Best regards!)

Guatemala City,
March 3, 1941.

Mr. R.P. Lukens,
Merck & Co., Inc.,
Rahway, N.J.

Dear Mr. Lukens:

The following arrangement has been made with Helmrich at Coban: he is to cut down to a height of 1 foot (more or less) all the "Coban Ledgers" at Samac, including all those in the field near his house where the 90 Original Ledgers are to be found, and about 80 more at a distance of perhaps one mile from this field. The one Original Ledger in the group near his house which tested low will temporarily be left standing.

I visited the location a mile or so from this group for the first time on Friday. As you remember, Helmrich had not given these trees any attention. As far as their growth and general appearance are concerned, these trees are far inferior to the group near his house that had been cared for. There are 2 Original Ledgers in this area which lies a mile from the group near his house, and these will be left standing; they are both small and skinny. Also 3 "Coban Ledgers" that I sampled will be left standing until the results come in. These samples I will send up as soon as they are dry.

It seemed more sensible to cut down as a group the "Coban Ledgers", to eliminate as far as possible undesirable cross-pollination with the fine Original Ledgers. It will still be possible to make experiments in "Top-grafting" on the stumps of these "Coban Ledgers", if it seems advisable.

Helmrich is anxious to sell Samac and retire. He says he is old and has lost enthusiasm for his work. Samac, he states, could be made into a first-rate Cinchona finca. (One might say that the trouble with this latter idea, however, is that the finca Samac, on the whole, has been worked hard for a very long time.)

I investigated the political status of W.E. Dieseldorff. (See General Program of Jan., '41.) Mrs. R.W. Hempstead, whom we all respect very much, says that he is Anti-Nazi although German. Consequently I had a chat with Dieseldorff, in which I asked him if he would be interested, in case we should like to carry out a Cinchona experiment at his finca "Sachamach". He said definitely yes. I then told him, (in order not to commit us to anything) that we didn't have any plants for such an experiment at present, but that I would let him know if and when we did. He seemed satisfied.

Incidentally, Dieseldorff is a hustling sort of a fellow. This, coupled with the fact that we liked the looks of "Sachamach", might make it to the advantage of the Cinchona Project to carry out said experiment with a few thousand Krukoff seedlings in 1942. As well as "Sachamach", he has several other properties in the neighborhood of Coban and Tactic, and is willing to have us experiment on any or all of them.

I left sacks, markers, etc. for Helmrich, who will collect and dry the rest of the seed at Samac, and then send it on to us. I took quite a bit back with me from Coban, which is drying at present in the hot-room of the Palace Hotel.

^{Seeds of} Thanks to Miss Barbara Koester, we are going to obtain 2 lbs. of Erythrina Guatemalensis from Coban. These I will send up to Rahway, as soon as they are received. If this type of Erythrina is worthwhile, arrangements can be made to collect more.

Very truly yours,

FRjr

March 7, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey.

Dear Mr. Lukens:

Our Succirubra Situation for Grafting Purposes is as follows:

(1) For grafting in May, June 1941, we have between 6,000 and 7,000 Succirubra Stock at "Loja", Naranjo.

(2) For Grafting in May, June 1941 we have an additional 10,000 Succirubra Stock at "Los Andes", Panamá.

For Grafting in September 1941, we should have between 10,000 and 15,000 Succirubra Stock in a spot near the "Lower Nursery Area", *Naranjo*.

For the Grafting Campaign of 1942, we should be well fortified with Succirubra Stock, far better fortified than in 1941, as in the past month we have sown at least 600,000 Succirubra seeds, and from now on I can guarantee that we will sow at least 50,000 Succirubra seeds every month.

This will leave us with a great quantity of Succirubra from which to choose for 1942. A question that merits immediate consideration is, where are we going to plant these Succirubra in Nursery position?

The answer is not so easy; but after talking with Benitez, I will inform you of the conclusion we reached: Naranjo being so steep, it would be most costly and difficult to construct a Nursery for more than 25,000 Succirubra Stock for the campaign of 1942 at this finca. We have tentatively chosen a spot above the present "Lower Nursery" that should receive most of this number.

But, of course, we will want at least 75,000 more Succirubra for next year.

Accordingly, why would it not be sound to plant these 75,000 at Los Andes, Panamá, thus converting our area there into one large Grafting Nursery? Benitez, in whose judgment we must confide as far as grafting is concerned, says that with all the water there is at Los Andes, and bringing down good soil, we should make out very well there with Grafts in the future, provided of course that more care is given to the grafts than has been in the past, in the months following the date of grafting. As the land at Los Andes is so very flat, it should be relatively cheap to construct Nursery Beds there for Grafting Purposes.

On the other hand, if we try to construct huge Grafting Nurseries at Naranjo, on top of our Seedling Nurseries, we are going to incur considerable expense and experience great difficulty, because of the nature of the land.

Under such a plan, we might concentrate on Grafting at Los Andes, (at the same time carrying on with a certain amount of Grafting at Naranjo), while we concentrate on Seedbed work at Naranjo.

I will be interested in hearing what you, Mr. Perkins and Dr. Popenoe think of the above.

Enclosed please find the Meteorological Record for the month of February 1941.

We had our first rain yesterday since February 23. It is interesting to note that it rained .71 inches at Huasibamba; .80 inches at Loja; and one inch at Chimborazo.

With best regards, I am,

Very truly yours,

F. Rosengarten Jr.
F. Rosengarten Jr.

c.c Dr. Popenoe.

Pinca Helvetia,
March 21, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I have just been over the entire Cinchona set-up here, and the results as far as the Krukoff seedlings are concerned seem to be as follows:

(1) The most successful seedlings are to be found at "Acultzingo", (altitude 4,500 ft.), and at the Administrator's house at "El Nil", (altitude 4,600 ft.). At "Acultzingo", although they have been practically abandoned, the seedlings seem to be in fine condition. At "El Nil" the seedlings are also healthy, but have had the advantage of more care.

(2) The Krukoff seedlings at "La Suiza" (altitude 3,400 ft.) however, although cared for more than those at other locations in Helvetia, have done by far the worst, and are on the whole far from a success.

This may possibly indicate that altitude has a definite effect upon the success of seed-bed and nursery work.

The grafting at Helvetia, it seems to me, has suffered from being too decentralized; there are some grafts at "Acultzingo", some at "El Nil", and some at "La Suiza"; the grafts at "Acultzingo" and "El Nil" have undoubtedly suffered from lack of care. Perhaps one trouble with our grafting in Guatemala thus far has been just this: with grafts scattered all over the place, and fairly far apart, it is difficult not only to organize the grafting effectively, but also to see to it that the grafts are properly cared for.

When Mr. Perkins was down here recently, he was impressed with the possibility of "La Merced", Patzulín, as a possible site for a seed garden. Essentially this idea is very sound indeed, but unfortunately, after carefully investigating the trees found at this spot, I have discovered the following: there are 41 Grafts, planted there in the field in September 1938 by Franko; of these 41, 21 are Indeterminate Grafts, that is their labels were mislaid or lost when the trees were planted out, (or possibly at a later date) so that it is impossible to ascertain just how good these grafts are. Of the other 20 Grafts, the only one whose mother tree has been analyzed thus far is H-159-C; H-159 gave a Quinine Sulfate result of 2.9% when tested last year.

Accordingly, the prospect of a seed garden in this spot is not so promising as it might be.

As Mr. Perkins says, we certainly should develop more seed gardens in this region, so as not to rely too heavily on the Pinca Samac, Cobán, because of Helmerich's age and nationality. So the most intelligent solution of this problem, it seems to me, is to start developing seed gardens this June at Naranjo. We can choose a spot at about 6000 ft. off to one side, near the Castafios boundary, let us say, and plant there a group of 50 of the highest yielding grafts made last year at "Loja" with the best Helvetia material; another 50 high yielding grafts might be planted off to the other side at 6500 ft., let us say, near the Alta Vista boundary. In this way, we can start our own seed gardens, with trees of which we are reasonably sure. At "La Merced", Patzulín, however, because of the unfortunate mix-up about the labels, we don't really know what we have there.

It might be well for the Smiths to start similar gardens at Patzulín, Moca, and Panamá.

Thanks to the commendable activity of Hoehn, the proposed areas for 1941 at 7000 ft., 6000 ft., and 5000 ft. have already been

opened up as planned, and most of the "staking" has been completed (to demonstrate where the holes will be made).

With best regards,

Very truly yours,

F. Rosengarten Jr.
F. Rosengarten Jr.

c.c. Dr. Popenoe,
Mr. Gordon Smith.

March 25, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

Following up the idea mentioned in my letter of March 21st, spots for seed-gardens have been chosen at Naranjo at 5500 ft., and 6500 ft., next to the Alta Vista boundary in each case. About 1/5 acre will be cleared at each altitude, and it is planned to plant out this rainy season 75 high-yielding *Helvetia* grafts of 1940 at 5 by 5 ft. in each location.

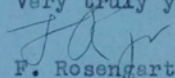
These 2 sites are about as far removed from the other Naranjo field plantings that exist and that are likely to exist as is possible within the limits of the Naranjo boundaries.

I received recently a note from the office of our Naval Attaché, Capt. June, advising me that a certain Dr. Nutter of Tegucigalpa, Honduras, thinks he has spotted some high-grade *Cinchona* there. I enclose my letter to Dr. Nutter, who requested that we get in touch with him.

I enclose a photo of Mrs. Perkins and Mrs. Pettersen that I hope will be of interest to Mr. Perkins.

With best regards,

Very truly yours,


F. Rosengarten Jr.

March 28, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

In the first place let me extend to you my heartiest congratulations. Mr. Perkins very kindly gave me a copy of a letter that you wrote him announcing your engagement, and I certainly wish you and your prospective wife every happiness.

I must apologize for the delay in answering your many letters. These accumulated while I was away on vacation and since my return it has been impossible for Mr. Perkins and I to get together to discuss some of the questions raised.

I will try to take your letters in order.

Your letter of February 23, 1941. The question of type of seed beds was raised in your letter and my impression is that it is too early in the game to say definitely which is the best. I believe that you will have to continue your experiments, and I notice in Mr. Pennock's reports that this is being given every consideration. I can only suggest that you might review again the literature that you have on this subject and take this as a basis for experimental work.

As far as the building program is concerned, I note that Mr. Perkins approved under date of March 3rd, remodeling the old building where the present kitchen is located, and also the change in the little building that contains the pila. I am returning the sketches to you as these may be the only ones prepared. Referring to the sketch covering the remodeling of the building containing the kitchen it is assumed that the bath (first class) contains toilet facilities. It is ~~was~~ not mentioned on the sketch but was undoubtedly thought of. I am also attaching the sketch of the house to be built for Mr. Pennock. This is approved by the Company. Mr. Pennock in one of his letters suggested that a fireplace be added which is entirely in order. Before

Mr. Rosengarten

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March 28, 1941

starting construction of the Pennock house, please submit an estimated cost for approval.

Your letter of March 3, 1941. The only point in the letter that needs comment, I believe is the arrangement with Mr. Dieseldorff. I think the action to be taken is recovered in the program laid down while Mr. Perkins was in Guatemala under item 10, page 2. As your investigation has shown that Mr. Dieseldorff is satisfactory, experimental plantings should be started with him.

Your letter of February 26, 1941. Two points in this letter need comment. Dr. Krukoff is away at the present time but I will try to obtain from him his method of collecting and drying Cinchona seeds. The other question is the development of a rough test for analyzing Cinchona bark. This has been given a great deal of study and thought by ourselves, but to date no simple field method has been developed which we believe worth while. The short method that I gave to Mr. Pettersen is the best that we know of. I think Mr. Pennock obtained the apparatus sent to the Pettersens and I believe on my visit I can instruct someone at the Plantation in the procedure necessary to do this assay.

Your letter of February 16, 1941, raises the question of weight of sample needed for assay. This has been gone over in earlier correspondence but I will repeat for your information that we would like, if possible to have 1 oz. of dried bark. If the tree is too small this can be decreased to 1/2 oz. of dried bark. Weights less than this are highly undesirable but in extreme cases 1/3 oz. might be used.

I am enclosing copy of a letter dated February 25, 1941 from Dr. Krukoff concerning Rauwolfia heterophylla - (Apocynaceae), Calycophyllum candidissimum - (Rubiaceae). This I believe needs no comment from me. Will you please try to obtain the samples referred to. I am enclosing also the specimen supplied by Dr. Krukoff.

I am enclosing a copy of a letter from Dr. Krukoff dated March 12, 1941 which concerns Spilanthes ocymlifolia. Will you please try to obtain samples requested. I also enclose a specimen.

I am also enclosing a copy of Dr. Krukoff's letter of March 13th, 1941 which concerns the preparation of specimens. You may wish to pass this along to Mr. Pennock.

Enclosed you will find our architect's sketch for the front of the church to be erected on the plantation. The construction of the church has already been approved.

March 28, 1941

Details of the floor space are left with you to decide. As with the Pennock house please submit an estimated cost of construction before actually starting building operations.

Your letter of March 7th, 1941. On the first page you suggest that certain areas of Los Andes be set aside as a large grafting area. It is our opinion that this is not wise. In the first place I believe some of the soil is questionable and the distance from Naranjo for proper supervision is too great. I would suggest that grafting be done at Los Andes with the plants that we have there, and that areas be made available at Naranjo for any large scale grafting.

Your letter of March 8th, 1941, with Mr. Pennock's letter attached, concerns the proposed new house. This was discussed earlier in our letter and needs no further comment.

Your letter of March 15th, 1941, refers to additional Cinchona samples taken at Coban and to the resampling of Zapote trees. The Cinchona samples have been received and are being assayed at the present time. Additional samples of plants other than Cinchona have not been received at the time of writing.

I would not advise selling the coffee pulpers at this time. I doubt that we will harvest any coffee, but would suggest that another year pass before we dismantle the equipment for handling coffee.

Your letter of March 19th, 1941. Page 2 of report on the status of Krukoff seedlings brings up the question of leaving 21,000 plants at Panama, with the eventual idea of selling them or giving them away at a later date. I do not think that they need to be moved right away and I am not sure that we wish to dispose of them. Perhaps it will seem advisable later to move them to Naranjo.

Your letter of March 21st, 1941. Item 1 of this letter refers to the seedlings at Acultzingo. You speak of these seedlings having been practically abandoned. I am wondering just what you mean by this. I realize that they are not on our property but I think the people at Helvetia should realize that duplication of this stock may be extremely difficult to obtain, and that if possible, care should be taken of the plants we have.

This letter also speaks of additional seed gardens. It seems to me that the question of seed gardens at Naranjo should certainly be tried but that we will

March 28, 1941

have to take any seed that we obtain as of doubtful value. I say this for the reason that there is not sufficient isolation at Naranjo so that we can be sure that the plants do not become crossed, and that eventually we will have to have seed gardens in more isolated locations. It would, therefore, be well to have the area at Patzulín tried out in this respect. You are more familiar with the distances and perhaps in this location also it is too close to trees of doubtful value.

Your letter of March 16th addressed to Mr. Perkins has been acknowledged in part by him. The question of supervision during your absence needs to be settled. In this connection we are not in favor of putting Hoehn in charge of the entire project during your absence. We believe that this responsibility should be placed on Mr. Pennock.

In one of your letters you speak of an additional galara, which you believe should be constructed. In line with the Company's policy in this respect, an estimate should be submitted for approval before construction is started.

I would like to discuss with you the question of expenses in general, and believe that we have reached a point where we should be able to estimate expenditures during the coming year. At your early convenience, will you please, therefore, prepare a budget covering the remainder of 1941, say from April 1st to December 31st. Your experience by this time would allow you to estimate labor and maintenance fairly close. Mr. Gibson can probably give you information about expenditures also. Do not include salaries of yourself and Mr. Pennock in your estimate. These will be added in Rahway. Naturally expenditures for approved construction and contemplated construction should be included.

The Research Division in Rahway has asked me to obtain from Guatemala, samples of Datura. I understand that there is considerable of this along the road to Naranjo. As you may know, this plant is a source of Atropine. It is my understanding that the entire plant is desired.

Dr. A. Walti, connected with the Research Division in Rahway is leaving on the United Fruit Liner arriving in Barrios, Friday, April 25th. Dr. Walti is going to carry out investigations on Papaya juice, Jacaratis and Picus Latex. He will probably spend some time at El Salto, Panama and perhaps at the plantation. He is making arrangements to ship down the necessary equipment, which is going to be consigned to Mr. Gibson. When Mr. Perkins was down he tentatively made arrangements

Mr. Rosengarten

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March 28, 1941

to use the laboratory at El Salto for his experimental work. It may eventually be necessary to use the Agricultural Department laboratory in Guatemala City, but we would like to avoid this if possible. I would like very much to have you meet Dr. Walti when he arrives in Guatemala City, and see that he is properly taken care of while in the country. He may need to live near El Salto for a short while, but I believe that he can make his investigations at Panama and live at the plantation. I cannot give you very many details at the present but I am sure with your intimate knowledge of the country and people that you can make satisfactory arrangements. Dr. Walti has told me that he will need about 10 gallons of 95% alcohol. Can you find out whether this is obtainable in Guatemala. If pure 95% alcohol is extremely expensive, he can probably use some denatured formula if there is any available. He will have to know, however, what the denaturants are.

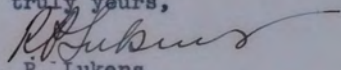
Your letter of March 25th, 1941. This refers to the location cleared at Naranjo for seed gardens. Please do not interpret earlier remarks in this letter about seed gardens as meaning we should not go ahead with them. I certainly believe that we should, but that eventually other locations should be found for seed gardens outside of Naranjo. Eventually some of the best of the Krukoff stock should be placed in seed gardens also.

Receipt is acknowledged of the photographs enclosed with your letter, which will be passed along to Mr. Perkins.

I also acknowledge copy of your letter to Dr. Nutter in Honduras. My guess is that the stock he refers to is probably some of the South American material moved in many years ago.

With best regards, I am

Very truly yours,


R. F. Lukens

RPL:CS

enc.

Finca El Naranjo,
April 7, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

Many thanks for your congratulations! I look forward to having you meet my fiancée, and hope that we will be honored by the presence of you and Mrs. Lukens at the wedding which is planned for June 21st.

I acknowledge receipt of yours of March 28th, and would like now to bring up the following points:

(1) An estimate of the cost of the proposed house for Mr. Pennock has just been sent to you for approval.

(2) It is planned to start experimental plantings with Mr. Dieseldorff in Cobán in 1942, when we should have ample Krukoff material for this purpose.

(3) Re. samples of Cinchona bark, in the past few days Mr. Pennock and I have taken samples of 208 Original Ledgers and 5 Cobán Ledgers at Helvetia; 9 trees at Panamá; 6 Original Ledgers at Mocá. We plan to continue at once with the sampling at Zapote. The samples will be shipped to you as usual when they are dry, along with the Individual Tree Records.

Our policy in taking bark samples at this particular time has been to sample all the Original Ledgers of 1 7/8" ^{1 1/2" or more} diameter (at 18" from the ground) that have never before been sampled. Also a few other trees that seemed worthy of note.

When the results of these samples come in, we should have a much better line on our Original Ledgers at Helvetia. This will be especially advantageous as far as our Grafting campaign of 1941 is concerned, so naturally we would appreciate getting these results as soon as is conveniently possible.

A few more Original Ledgers will be sampled at the finca Samac in the beginning of May, when it is planned to make a trip there with the primary purpose of having Benitez take a few cuttings of every Original Ledger (with the exception of the 1 low-yielder that we know of) in the group there; this material will then be rushed to Naranjo and grafted there as soon as possible, to be given the greatest possible care; some 25 of these cuttings, as previously arranged, will be given to Mr. Pettersen. Helmrich, of course, will be paid for these cuttings according to the contract we made with him.

(4) I will endeavor at once to obtain the samples desired by Dr. Krukoff.

(5) An estimate of the cost of construction of the church will be sent to you as soon as it is completed.

(6) Mr. Pennock will sample a few of the trees that were sampled last June, this coming June, in order to make a few interesting comparisons.

Dr. Popenoe

Finca El Naranjo,
August 24, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

Enclosed please find letters to Owen Smith and the Administration at Helvetia that are self-explanatory. Mr. Gordon Smith has been given copies of these letters.

On September 1, I plan to take Benitez on a similar trip to Zapote.

Arrangements have been made with Manuel Herrera at Velasquez, (altitude 910 ft.) to make a Cinchona experiment with 500 Krukoff # 100 series seedlings on September 10. Benitez and I have visited Mr. Herrera, chosen the location for the field-planting, and we are all set to bring the plants over on the date noted above.

The 4th Cinchona meeting was held in Helvetia on August 19th. Among other points brought up, it was agreed that within the next two months a Cinchona Experiment would be started at Panamá (altitude about 2000 ft.), and Mocá and Helvetia (altitude 3000 ft.)

Thus in 1941 we will have started Cinchona Experiments in Guatemala at the following altitudes with Krukoff seedlings.

Velasquez	910 ft.
Panamá	2000 ft. (about)
Mocá	3000 ft.
Helvetia	3000 ft.
Huasibambita, Naranjo	4000 ft.
Lojita, "	5000 ft.
Chimborazito, "	6000 ft.
Aconcagua, "	7000 ft.

Making these experiments now should have 2 advantages: (1) They will not interfere with 1942's tremendous task, and (2) We will get an earlier line on the results.

Hoehn recently made a two day tour of the land between Naranjo and the volcano Zunil. I enclose a translation of his report re. this trip.

Mr. Manuel Herrera, an old friend of Dr. Popenoe, is a very able and enthusiastic farmer, and might well be a valuable contact for us in case we wanted to make experiments with planting papaya, ficus etc. on a moderate scale on the low coast, below 1000 ft.

Very truly yours,

F. Rosengarten Jr.

DESCRIPTION OF TRIP MADE BY E. HOEHN, AUGUST 15, 16, 1941.

Territory covered includes area between Naranjo and volcano Zunil.

The description starts at the pueblo Santa Tomas la Union, alt. 2900 ft.

From the road in the village of Santa Tomas down to the river Mazá, (more or less 3 kilometers), there are several coffee fincas; one large finca, San Jaime; and several smaller fincas belonging to the Indians.

From the river Mazá, altitude 2700 ft., going up the valley between the chain of mountains forming Zunil, and the hills rising from the finca Filadelfia to the pueblo Santa Clara, only milpas of corn are to be found up to an altitude of 4200 ft. , at which point one crosses the river Nahualate. In this valley are to be found as well many fruit trees including aguacates, mangos, matazanos, oranges, and other rarer fruits unknown to me. The soil here seems very rich; in part yellow clay, in part black sand, in part white sand. It is for the most part quite rocky. Water is abundant. There are many rivers (we had to cross seven in all.) The higher points in this terrain, which are not sown with milpas, are virgin land, but too steep to be useful.

From the river Nahualate (4200 ft.) up to the highest point in the valley (6800 ft.) there is only ~~virgin~~ virgin land, formed almost entirely of white sand with very little top soil. Then at the highest point the type of soil changes, and the entire terrain is sown with milpas. Between the milpas are scattered pines.

From this peak, the village Santa Clara (7050 ft.) may be seen. In this region only corn milpas are to be found. The land here although rich, belongs to the municipalities of Santa Clara, Santa Catarina and Nahualá. Legal titles are held for all this land, which has been split up among the municipalities under the condition that it never be sold.

The village Santa Clara is located on an enormous plain which is inhabited almost entirely by Indians. Returning from this pueblo to Naranjo, one finds only virgin land and milpas until the finca Madrid is reached. This finca has large tracts of secondary growth and a few milpas in its upper regions. I then passed through the virgin land of the finca Horizonte which is very steep. I then continued on through the fincas Alta Vista and Baja Vista, which on the whole do not seem to contain much promising land, before I returned once more to Naranjo.

In conclusion, much of the land between Naranjo and Zunil above 4000 ft. is promising, but is being used for milpas by the Indians for the most part, and at present could not be sold to any outsider.

Finca El Naranjo,
August 16, 1941.

E. Hoehn.

(7) Re. the site for a large grafting area. Of course this largely depends on the extent to which we expect to graft; but a sound policy would seem to be to graft all the high-yielding material that we can possibly graft for the next few years at least.

The grafting campaign for 1941 is naturally limited by the small amount of *Succirubra* stock we have on hand, so this needs little comment. We expect to start grafting at "Los Andes", Panamá about April 20th; at that time we will start by using cuttings from the best known trees we have at "Huasibamba", Naranjo, and the best known trees we have in the Merck Area, Panamá. Also cuttings will be taken from as many Original Ledgers as possible in the Merck Area, Panamá, even though these have not been analyzed, as it seems best to get representative strains of these trees before they may die.

The grafting at "Loja", Naranjo, will be conducted for the most part in May, with the material from Cobán noted above, and also the highest-yielding material that remains at Naranjo. In addition, worth-while *Helvetia* and *Zapote* material to which we have a claim, will not be over-looked.

The area for 1942 grafting merits consideration at this time, however. Personally, I feel sure that we can do a much better job of grafting in a large centralized grafting area than if the grafts are scattered in one small area here, another small area there. Better organization and better care of the grafts will then be possible.

Due to the steep terrain at Naranjo, and the cost we would incur in making such an area there, it would seem that the large flat Merck Area at Panamá is certainly worthy of note, especially because Benitez thinks he can graft with as much success there as at Naranjo, we have unlimited water at "Los Andes", a good guardian of grafts in the person of Julio Fernandez who could concentrate his efforts completely on taking care of the grafts according to specific instructions given him.

But perhaps it would be best to let this matter ride until we can talk it over verbally, which should be within 2 months.

(8) The coffee pulpers, as you suggest, will not be sold at this time.

(9) Re. the Krukoff seedlings at Acultzingo, *Helvetia*; when I say abandoned, I mean in particular abandoned because of distance, rather than lack of interest. (As you remember, Acultzingo is a good 40 minutes by car from the house at *Helvetia*.) In truth, however, the Gordon Smith Cinchona Organization keenly misses John Smith's enthusiasm and attention.

(10) Regarding supervision during my absence from Guatemala, according to your suggestion the major responsibility for the entire project will be placed on Mr. Pennock. Before I go, I will naturally leave carefully prepared plans and schedules, suggestions etc. By the way, I have not yet heard from you and Mr. Perkins as to the definite length of time you propose to grant me to get married etc. At present, I plan to leave Guatemala about June 1st, but am not sure when you wish me to return. Naturally, I would appreciate hearing from you about this as soon as possible.

(11) As the construction of an additional barn-like galera seemed most important due to the coming rains, and as the cost of the whole thing should be about \$100, (outside of the lamina roofing material which will come from the seed-beds at Panamá), it seemed best to get this moderate building constructed as soon as possible, relying on your sanction, especially since the advisability of such a building had been approved, as I recall, when Dr. Popenoe was here, provided it should ever become necessary. At present this building is almost completed. I did what I thought was best for the Project as far as getting this building completed was concerned, and I humbly apologize in case you would have desired me first to obtain your approval before commencing the actual work.

(12) Following your request, I will at once start preparing a budget covering estimated expenditures from April 1 to December 31, 1941, (excluding the salaries of Pennock and myself.)

(13) I will do my best to see to it that Dr. Walti is properly taken care of in Guatemala, and will find out whether he will have difficulty in obtaining 10 gallons of 95% alcohol here.

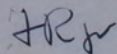
(14) Enclosed please find the Meteorological Record for March 1941. During this month we had 14.26 inches at Loja; 13.43 inches at Chimborazo. During the 48 hours of March 29 and 30, it is interesting to note that we had 10.39 inches at Chimborazo, and 9.22 inches at Loja.

(15) Although the seed-bed experiment at Atitlán proved to be a failure, the Herreras are still very much interested in Cinchona, and it is planned to make a trip in May to look over some properties they have in the Quiché, one of which they hope may be suitable for Cinchona.

(16) I would like to suggest the following plan for approval. To divide the old kitchen in the Old Building that is to be repaired into 2 bath-rooms instead of one. (There is ample space for this.) Then the 4 first class bed-rooms that will be constructed could be divided into 2 units of two bed-rooms and one bath-room each. I do hope that you will approve of this suggestion, as probably the two bed-rooms and bath over-looking the barranco would be then most suitable quarters for my prospective wife and myself when we return; the other 2 bed-rooms and bath in the Old Building could be reserved for guests. Each bath-room would be supplied with a toilet, wash-stand, and inexpensive shower. Of course, my prospective wife and I would eat in the big house with the Hoehns etc.

With best regards,

Very truly yours,



F. Rosengarten Jr.

April 14, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

We now have the assays on the samples referred to in your letter of March 15, 1941, and are attaching a copy in duplicate.

Needless to say some of the trees look very promising. I refer to Z-628, Z-629, Z-630 and Z-631. They look so good that the results might be questioned. I have checked with the chemist and he is satisfied that the assays are correct. Do you suppose there is any possibility of sample mixup. When these trees were sampled on 6/23/40, three of them contained about one-half of the Quinine content shown and one Z-630 was only one-third. Before jumping at any final conclusions would it be possible to sample any of these trees again without damage to the tree. I will leave it to you to pass the information along to Mr. Pettersen.

On some of the samples submitted, we do not have tree records, but I would suggest that even though they do not look promising right now, that you send us the tree records. Future samples may possibly show the same increases as above.

The Coban samples do not look promising at the present time, but they might well be sampled at some later date.

Whether the sampling in wet or dry season has this much influence I do not know. It is hard to conceive of this being responsible for such a variation. When we accumulate sufficient data we may obtain a more definite answer.

Yours very truly,

K. P. Lukens

RPL:CS
enc.

cc to Guatemala City

P. S. The next time you are in the City, will you please obtain from the Cable Company, registered cable address for future use.

cc Mr. Perkins
Dr. Popenoe

April 25, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

I have several of your letters to acknowledge, but first let me tell you about my tentative plans. I am trying to make reservations on a steamer sailing from New Orleans May 14th and arriving in Barrios on May 17th. This will give me about seven days with you before you sail for New York. I am going to try to come back on the Antigua on the 25th, which I believe you are planning to catch also.

Washington has just informed us that the Cinchona they planted for us in February 1940 is just about ready to move, and I am making plans to try to get this material off and down in Guatemala before you leave. This stock consists of about 100 samples selected from the best of the Krukoff seeds. Just how many plants there are I cannot tell you at this writing. If possible I am trying to get them on the Musa sailing from New York May 10th, but this date cannot be taken as definite. The material will be consigned to Mr. Gibson as usual, and the plants should be moved to the plantation as soon as received.

In your letter of the 7th you very kindly invited Mrs. Lukens and I to your wedding. Please be assured that we accept with thanks.

When I come down I want to clear up the question of grafting at Naranjo and Panama. I am not sure whether I understand perfectly just what you contemplate. All of us have in mind that it is not desirable to move stock from Naranjo back to Panama. I assume that this is not your intention.

In your letter of the 7th, item No. 16, you bring up the question of living quarters for yourself and wife. The Company approves your suggested plan to remodel part of the old building.

Mr. Frederic Rosengarten, Jr.

-2-

April 25, 1941

Attached to your letter of April 15th was a copy of a letter addressed to Mr. Davies at Helvetia, concerning the division of grafts. There are a number of points that we might well discuss on my next visit. As I remember, the original understanding was that these grafts would be divided equally between Gordon Smith and ourselves. With this understanding if Gordon Smith wanted Owen Smith to have part of them, it should certainly come out of his share. As it stands now, the Owen Smith portion comes equally from our share and Gordon Smith's share. The Company does not object to this as long as we have a thorough understanding that seeds and grafting material are available to us from the Owen Smith portion.

As to the question of seed gardens at Patzulin and Helvetia I believe that the plan is well worth while. I do not know enough about trees to state just how the selection for seed gardens should be made. Have you discussed with Mr. Pennock the question of sex in selecting trees for seed gardens?

Your letter of April 19th is acknowledged and it is noted that you are sending by air express an additional 264 bark samples. As soon as these arrive we will put an additional chemist on this work in order to hurry it thru. On my next visit I hope to be able to show someone at the plantation the method used to make an approximation. This may give you your information quicker and also cut down the number of samples to be sent to Rahway. If I remember correctly you took over all of the equipment originally sent to Mr. Pettersen for this purpose. If this is not the case can you get it?

As pointed out in your letter of April 21st, I think it is a good idea to limit visitors at the plantation to those who are well known to us.

There is another matter that we want to go into very seriously on my visit and that is the question of additional space for planting. With the present world situation we will probably want to save all of the seedlings that you now have. I believe that you are making a survey in order to find possible locations which we might obtain.

Very truly yours,

R. P. Lukens

cc reg. mail to
Apartado postal

RPL:CS

cc Mr. Perkins
Dr. Popenoe

April 26, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I have just been to Zapote, where, following the encouraging results of the "Monterey Succirubra" as per the list of April 11, 1941, I sampled 22 more of these seedling trees, and 3 grafts of the mother "Monterey" tree. From these results we should get a better line on this "Monterey Succirubra" material. It seemed best not to put any additional strain on the 4 trees over 6.6%, as they have all already been sampled twice. In a few months it might be well to sample these again as a check. If the trees were sampled, let us say next September, the sampling would have the additional purpose of a comparison of Q. S. content in the wet and dry season, which was my original reason for sampling them in March.

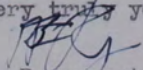
The enclosed agreements with Pettersen are self-explanatory. In the Original contract, we have no right to cuttings of these particular "Monterey Succirubra" trees, as they were grown from the seed of the "Monterey" tree, which already existed at Zapote long before Merck experimented there. So I thought it best as I am going away soon, and Pettersen is also, (to fetch his daughter from Canada) to get something down in writing which would give us a call on material from these trees at least during 1941. Pettersen will receive the approximate 15,000 seedlings from Panama which you originally had approved for him.

I would suggest that the samples of the "Monterey Succirubra" be analyzed as soon as they conveniently can be after they are sent up, (even ahead of any Helvetia samples which may remain.) as if others of this "Monterey Succirubra" group turn out sensationally, it will be to our advantage to graft cuttings from the most promising as soon as possible. (As the group will then have proved themselves to be truly remarkable hybrids.)

The complete "Individual Tree Records" for 1941, up to this time, and including trees sampled by me in March at Zapote which up to now had not had records, will be sent up as soon as they can be completed.

The agreement (A) with Pettersen is merely a formality to protect us with regards to the Washington trees to which we definitely do have a right to half the cuttings, as per the contract. You will recall, however, that due to the fact we neglected to claim our cuttings in early 1940, these trees were stripped of material before we had made up our minds as to whether we wanted it or not.

Very truly yours,


F. Rosengarten Jr.

April 28, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

In your letter of April 19, 1941 you spoke of a proposed form to be used to record the growth of various types of Cinchona. I would like, if possible, to leave this open for discussion on my visit.

My reaction is that it adds to the complication of the bookkeeping, and I am wondering whether or not our present Individual Tree Record could not be used for this information. I also have in mind that trees which show very slow growth are not of particular interest to us and that they will not be used for seeds or grafting purposes. Sufficient records should be kept, however, in order to select the outstanding varieties. I wrote to Dr. Krukoff about your suggestion. He also is of the opinion that our Individual Tree Record might be suitable. He also suggests that it should be sufficient to keep measurements on at least ten medium or average and ten large seedlings of each class. Suppose, therefore, that we discuss this further before we take definite action.

Yours very truly,

R. P. Lukens

cc regular mail to Apartado
postal numero 284,
Guatemala City, C. A.

cc Mr. Perkins
Dr. Popenoe

copy

April 30, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

About three months ago, the night before Hoehn and I left for the zone of Barillas, the Mexican Director General of Agriculture paid a call on us at Naranjo.

He spent the night, and the following morning asked first Pennock and then me for plant material. He was politely refused in both attempts.

A few days ago, Pennock received the enclosed letter from the Mexican Ambassador in Guatemala.

On April 28 I made the enclosed reply, after having consulted with Don Mariano Pacheco, Mr. Cabot, and Captain June.

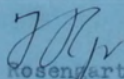
Don Mariano assured me that he himself had made no such offer, and did not know anything about it; he wanted me to write a most indignant reply to the Mexican Ambassador.

The letter I actually wrote was mild in comparison to this suggestion, but I hope it is sufficiently firm.

Acting in accordance with our company policy, it appeared that it might be a bad precedent if we should give the Mexicans Ledgeriana plants at this time, even if we could spare them, which we can't.

Before mailing my reply, I subjected it to Mr. George Sanchez for approval.

Very truly yours,



F. Rosengarten Jr.

EMBAJADA
DE LOS
ESTADOS UNIDOS MEXICANOS
EN GUATEMALA

GUATEMALA, 17 de abril de 1941.

Sr. Ing. William Pennock
Apartado Postal 340,
Ciudad.

Muy estimado señor Ingeniero:

El señor Director General de Agricultura de México, Ingeniero Eduardo Morillo Safa, durante su reciente visita a este país, recibió del Gobierno de Guatemala la amable oferta de que se cederían al Gobierno de México cien plantas vivas de quina de la especie "Ledgeriana", las cuales, según entiendo, se obtendrán en la finca "El Naranjo", cerca de Tiquizate. Y el propio Ingeniero Morillo Safa desea que esta Embajada de México se comuniqué con usted para tratar lo relativo a la selección de dichas plantas y la preparación de las mismas para ser embarcadas.

Como el embarque en cuestión se desea hacer en avión que vendrá ex profesamente de México, a fin de poder fijar la fecha para el viaje del avión, de la manera más atenta ruego a usted tenga la bondad de indicarme para cuándo podrían estar listas para su envío las mencionadas plantas. Y asimismo le suplico indicarme en qué forma se podría arreglar el aterrizaje del avión en el campo de la United Fruit Co. en Tiquizate.

Al anticipar a usted las gracias más expresivas por estas atenciones, con las que me permito molestar a usted a ruego del Ingeniero Morillo Safa, me es grato ofrecerme de usted como su afectísimo y atento servidor.

Salvador Martínez de Alva
Embajador de México.

EXPERIMENTAL PLANTATIONS INC.
FINCA EL NARANJO
CHICACAO, SUCH.

28 de abril de 1941.

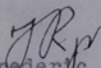
Excelentísimo Señor Embajador de México:

Con referencia a su muy estimable nota fecha 17 de abril en curso, tengo el honor de manifestar a Ud. que somos una empresa particular y que no podemos disponer de plantas de la finca "El Naranjo" sin autorización de nuestros jefes de New York.

Nosotros mismos no les hemos ofrecido plantas de "El Naranjo", ni nos ha informado tampoco el Director General de Agricultura de Guatemala que el ha ofrecido plantas de esta finca.

Así es que con el mayor sentimiento no podemos dar las plantas solicitadas.

Con el mayor aprecio y consideración, me es grato ofrecerme de usted como su afectísimo y atento servidor.


Frederic Rosengarten Jr.
Por Experimental Plantations Inc.

Dr. Popenoe

August 12, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey.

Dear Mr. Lukens:

On Thursday August 21, it has been arranged that Benítez and I will visit the finca Velazquez of Manuel Herrera and aid Mr. Herrera in choosing a promising site for the experiment to be made at 1000 ft. Some 3 weeks later we plan to transplant to Velazquez 500 Krukoff seedlings (# 100 series), from Naranjo. It should be interesting to note the behaviour of these plants from time to time in the years to come.

I saw Mr. Sanchez recently, and he will talk directly with the Mr. Rivera who is in charge of the affairs of Esterlina.

Also had the pleasure of seeing Mrs. Popenoe for a moment in Antigua, who is well and says she expects Dr. Popenoe at the Casa Popenoe at the end of this week.

Thursday and Friday I plan to take Benítez to Patzulín, Helvetia, Panamá and Mocá, so he can make a thorough examination of the nurseries at those fincas and offer suggestions that might be helpful to Messrs. Gordon & Owen Smith.

We have had practically no rain so far this month at Naranjo, which although somewhat hard on the field plantings has been a blessing to the nurseries, which, on the whole, seem to be in fine condition.

Doing especially well are the Ledger seedlings growing from the choicest seed of Helvetia and Samac. Benítez points out they are a much healthier lot than the Ruehl seedlings of 1934.

By the way, thinking of land that might be suitable ultimately for these seedlings, it appears that Castaños has abandoned all coffee land above 3800 ft. since 1939. Between 3800 ft. and 5200 ft. there are 3 cabs. of abandoned coffee land in Castaños. Between 5200 and 7150 ft. (the upper line of the property) there are 3 1/2 cabs. virgin land which Hoehn says are A 1 plus. It might be worthwhile to find out if the upper portion of Castaños (from 3800 ft. to 7150 ft.) could be purchased without the lower part including the coffee. As Nottebohm is on the black list, however, it might be more prudent to wait a few months and see what turn the war may take before making an active investigation. What is your opinion? The upper part of Castaños, as you remember is directly south-east of upper Naranjo, and as the soil there bears Hoehn's highest recommendation, and the area actually touches our property, it might make a very choice addition to our set-up.

For some time I have been wondering about the advisability of the plan of selling Krukoff seedlings next year. If I may offer my frank opinion, I think that if we try to sell some of these seedlings next year, we are going to run into nothing but headaches, and it is possible that the Cinchona project as a whole in Guatemala will be slowed up. For instance, we are anxious to try out certain zones and altitudes in Guatemala with Cinchona, and obviously it should be easier for us to carry out these experiments if we give away Krukoff seedlings, rather than sell them. For example if we give away seedlings to Manuel Herrera at Velasquez, in the experiment we wish to start at 1000 ft., could we charge Carlos Herrera for the seedlings with which we wish to experiment in the Zona Reina, or charge Mackinney for the seedlings with which we wish to experiment in the Tumbador, or Dieseldorff in Cobán etc.? And if we did charge them, would they still want to try out the experiment?

Would it not be better for the advancement of Cinchona in Guatemala to set aside some 50,000 to 75,000 Krukoff seedlings to be distributed in 1942, (provided we suffer no great losses before March 1942) among the Smiths, Pettersen, Herreras, Mackinney, Dieseldorff and certain other finqueros in whom we may be interested because of the possibility of their fincas, said seedlings to be given away? In short, it is possible that the small revenue we might take in from the sale of Krukoff plants in 1942 might put us at a disadvantage in the long run.

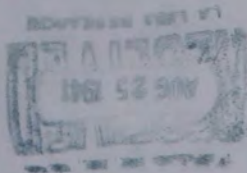
I would appreciate very much hearing your reaction and that of Mr. Perkins re. the above suggestion which is offered humbly but most sincerely.

With best regards,

Very truly yours,

F. R. J.
F. Rosengarten Jr.

* Of course, the above refers only to 1942. In 1943, & later it might be advisable to sell plant material, as by then we should be more strongly established.



August 18, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

There are several of your letters and Pennock's reports to acknowledge.

Please be advised that this morning I received the sample of *Erythrina* representing the tree at Naranjo. These will be passed to the Research Division for identification.

For your information I am attaching a list of Guatemalan firms on the so-called "Proclaimed List". Some of these you have undoubtedly had business dealings with in the past. I would suggest that you check with the American Embassy and be guided by instructions from them as far as future dealings are concerned.

While you were away Mr. Pennock sent me two Cinchona bark samples. Reference is made to these in his letter of July 21, 1941. One of them was a sample of "Iso-quina" obtained from Mr. Latour in Guatemala. Analysis shows that this contained no Cinchona Alkaloids. The second sample submitted at the same time, was from Major June and I believe this sample originated with Dr. Julio Lang in Tegucigalpa. The laboratory reported that this contained no Cinchona Alkaloids.

As a routine matter, I go over with Mr. Gage each month, the monthly cash and voucher statements submitted by Mr. Gibson. I also see the Planila with its supporting vouchers. I do not know whether you see these statements or not. It is naturally very difficult for me to state why such expenditures were incurred, and I would, therefore, like to be sure that you see all of them before they come up here - in fact I would suggest that you sign these monthly statements so that I know you have seen them and can vouch that all the charges are authentic. In most cases, Hoehn signs for the material received at the plantation, but there are still a few bills which have no signature as being received by someone in authority.

August 18, 1941

I noticed that on the list dated April 11, 1941, Hoehn received a check for \$600, which was his salary for December 1940, January, February and March 1941. Do you know how it happened that all this back pay was accumulated? I spoke above of bills that are not O. K.'d. Owen Smith's bills fall into this class, and there are some others besides.

In your letter of August 4, 1941 you stated that Mr. Pettersen was anxious to know what kind of bark was quoted at 87¢ per lb., and who would pay such a price. Frankly, I do not know what kind of bark it is, and I also do not know of any manufacturer who would pay such a price. The only thing that I can think of might be that small users and retail druggists may have to pay a price this high.

Incidentally your letter of August 4, 1941 was written on a sheet of paper containing the following heading:

"Guatemala Plantations Aktiebolag"

What does this mean?

Mr. Pennock advised in his letter of August 5, 1941 that there will be 15 or 20 more samples this year to assay. We can take care of these very nicely at any time that you care to send them. He also asked whether to resample trees 876 and 898, as these samples were lost during assay. As it is rather dangerous to resample these trees now, I would suggest that we let this go until next year.

In Mr. Pennock's letter of July 18, 1941 he asks how we get the weight per square centimeter on the dried bark. This is not done by actually cutting out a square centimeter and weighing it, as the bark is too rough to do this. It is gotten by getting the average thickness of the bark with a micrometer and then multiplying this figure by the specific gravity, the specific gravity being obtained by finding the point where the bark will float on liquids at various gravities. I think it would be an excellent idea, as Mr. Pennock points out, to calculate the weight of bark on trees from some weighed sample. I realize, of course, that you are not equipped to do as we do in getting bark weights. A square centimeter is also somewhat small. Would it not be possible at the time the tree is sampled to get a piece of bark that could actually be measured and weighed? Mr. Pennock goes into further details of this in his report of July 9, 1941 covering experimental work for May. It is easy to see from the proportionate weight of branch and root bark why

Mr. Frederic Rosengarten, Jr.

-3-

August 18, 1941

a tree average may be low. I would suggest, as so much depends on our estimates of Quinine yields, that on my next visit we discuss in detail a formula to be adopted covering this calculation.

Incidentally Mr. Pennock's report of July 9, 1941 was very interesting and it is work of this kind that will eventually help us I believe in making the Cinchona project successful.

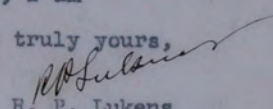
With one of your recent letters you gave me further descriptions of Pincas that you have visited with the idea of finding out whether or not they would be suitable for Cinchona. I certainly hope that we will be able to have Dr. Popenoe look at some of these this fall. We will probably go into this further when I come down.

I also wish to acknowledge your letter of August 12, 1941. As far as the land Castanos is concerned I would suggest that we wait a while before taking any definite action. This also might be something that could be discussed with the American Embassy in a confidential manner.

On the second page of your letter you again bring up the question of distribution of seedlings, and I believe that your reasoning is sound, i. e. that we do not charge for the seedlings during 1942, ~~while~~ distributing them, however, only to a carefully selected group that we feel certain will give them the best of care. I have not checked with Mr. Perkins on this point but will do so at the first opportunity.

With best regards, I am

Very truly yours,


R. P. Lukens

RPL:CS

cc Mr. Perkins
Dr. Popenoe

cc regular mail to Apartado numero 284
Guatemala City, C. A.

D. Popence

August 25, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, New Jersey.

Dear Mr. Lukens:

I acknowledge receipt of yours of August 18th.

(1) Re. the "Proclaimed List", as you say it would definitely be best to wait awhile before taking any action about Castaños. This ties up with a confidential chat I had recently with our Consul-General, Mr. Williamson.

(2) Re. the check for \$600 which Hoehn received in April: this was due to an oversight that he had been sent no salary until that time, and to his long-suffering patience in not informing us.

At your suggestion, from now on I will sign the monthly statements. Between September 1940 and the time Hoehn became established here, I signed these statements, and was familiar with their content. Since January, Hoehn has signed them, (as Franke did before September) on the theory that the Administrator would be most familiar with the fixed expenses. It might be a good idea for us both (Hoehn and I) to sign these statements. I will talk this over with Gibson. Also, I will discuss with him the matter of bills that have not been O. K'd. (Owen Smith's bills etc.)

(3) "Guatemala Plantations Aktiebolag", is the concern that Mr. L.L. Petersen of El Zapote represents in Guatemala.

(4) The Esterlina owners seem to be rather ice-cold about selling a part of their property, but expect to visit Naranjo next week to discuss the matter further.

(5) I have just received a letter from Dr. Popence from La Lima, Honduras, dated August 15, 1941. I believe you have a copy of this letter. So sorry he won't be with us for several weeks more. Re. Sr. Zapata, the representative of the Colombian Gov't., I shall do my best to see that he gets well orientated in Guatemala. Frankly, I am not entirely clear as to how you want this man handled. Am I right when I assume you don't want plant material to be given him, except for some seeds that may be available? (Undoubtedly this will be one of the first things he will want.) Also I presume a certain caution should be exercised in passing information of confidential nature along to him. I would appreciate advice from you re. the above. One thing, however, strikes me rather clearly. That is that we certainly don't want to risk falling in the bad graces of the Guatemalan Gov't by overdoing our generosity to Sr. Zapata in either plant material or information. (Apart from the purely technical information which we of course will be only too glad to pass along.) We have been stressing all along that our Cinchona efforts are for the good of Guatemala etc. etc., a point which is true, and might well, I think, remain clearly established.

As the rains are starting again, we are starting once

more with our scheduled transplanting to the field for 1941,
which became stalled in July due to the dry spell.

With best regards, I am,

Very truly yours,

F. Rosengarten Jr.

Dr. Pope

Finca El Naranjo.
August 30, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

Enclosed please find copies of several letters which are self-explanatory.

The opening-up of field areas for 1942 at Naranjo is progressing satisfactorily.

This week at Naranjo good progress has been made with the field plantings for 1941. A total of 4,710 Krukoff seedlings were planted in the field at the following locations; Aconcagua (7000 ft.), Chimborazito (6000 ft.), and Lojita (5000 ft.). This brings up our total plantings for the year at Naranjo to over 6000 trees. (2000 in each of the above locations as per plan.) Several hundred more Krukoff seedlings will be planted out at Huasibambita (4000 ft.) within the next three days.

On Friday, 2000 Krukoff seedlings were transplanted from the Lower Nursery to Lojita, in well-ordered fashion under the direction of Boehm. We feel that in 1942 it will be quite possible to plant out at least 5000 Krukoff plants daily, provided they are of the same class. (K # 100, K # 200, etc.) The difficulty occurs when large numbers of plants of many different classes have to be planted out at the same time.

It looks now as if our field planting efforts for 1942 will be divided into two sections. The first and biggest push will be made in May and June; as July invariably has a considerable dry spell, it might be more prudent to wait until August and finish up the planting out in the wet months of August and September.

Careful counts are being made at present of our Krukoff material in seedbed and nursery stages. Careful measurements are also being made of the huge "Pump Nursery", which is all but completed, the pump having been installed by Don Pancho, and the tank being ready to function. Benitez is waiting for November to transplant seedlings here at 6" by 6" from the seedbeds and Lower Nursery. When the above information is complete and has been checked over and assembled by me, I will send it along to you. Only when we have these data at our finger tips can we make intelligent tentative plans for 1942's planting out, distribution of seedlings to co-operators etc.

This coming week I plan to make a trip to Coban to see Helmrich and Dieseldorff. The latter, according to our American Diplomatic authorities here, is definitely not Nazi. Arrangements will also be discussed for 1942's Samac seed collection. We feel it would be wisest to send a boy to Coban to live for the months of February, March and April 1942, in order to be on the spot to collect the seed when it is ripe, and to clean it and segregate it etc. In this way, the collection of this valuable seed should be much better controlled than would be possible under haphazard trips to Coban by Pennock or me. (Also, this plan will turn out cheaper than excess traveling expenses etc.) When Dr. Krukoff is here, we can go over detailed instructions for this

Perhaps Julio Fernandez, our present boy at Panama would be the wisest choice. He is intelligent and conservative. One of our Agricultural School boys could then be sent to Los Andes to fill in, during that period.

Incidentally, before you come down, I do wish you would talk over the contract we have with Owen Smith, with Mr. Perkins. To be fair to Owen and to ourselves, this contract should be changed. As we expand, we certainly cannot and do not want to put 10 % of our worthwhile material in Guatemala at Los Andes. Owen has asked me about this more than once, and all I can do is stall him off, which is not a healthy situation in the long run with an Al co-operator. Perhaps we should take a definite stand about our future activities in Los Andes. At least not leave him up in the air, as he certainly would be if we did not have so much good will with him.

With best regards,

Very truly yours,

F. Rosengarten Jr.

c. c. Dr. Popenoe.

R. Popenoe

Guatemala City,
September 6, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

During the past three days I have visited Helmrich, and also observed several properties in the Coban region with an eye to future Cinchona Experiments there.

8 to 9% Ledger seeds from Samac and Helvetia have been given to the following: Mr. George Koester of finca Seamay, Senahú; W. E. Dieseldorff of finca Sachamach, Coban; and Alan Hempstead of finca Mocca, La Tinta. (About 3 hours from Coban towards Panzos.)

To begin with, the trees at Samac appear to be thriving, and we should get some very fine seed from them in February, March and April of 1942.

Helmrich is very anxious to assist us in every way with this seed collection, and would be most willing to give board and lodging to any employee we might send to Samac in the period noted above.

Helmrich is worried, however, that he may be put in a concentration camp at any given moment. I have just ascertained from our Consul General, Mr. Williamson, however, that Helmrich is not on the latest black list here. (Probably due to his age and the fact that he is a small farmer.) This is not only a lucky break for Helmrich, but also to a certain degree for us, as it may avoid complications later on. Mr. Williamson wants this information to be kept confidential among ourselves. (i. e. even Helmrich is not to be informed.)

Enclosed please find a letter to Mr. Williamson that is self-explanatory.

At Samac, you will recall that 33 hybrids were cut back by Helmrich in early March at our request so that these could not spoil our choice Ledger seed garden. (i. e. 33 in the field next to Helmrich's house; many more, about a mile away, were also cut down.) With regard to this cutting back, an interesting sprout experiment, (with hybrids) has resulted.

Of the 33 trees cut back 6 months ago, (to about 2 ft. from the ground) 27 are living and sprouting, for the most part vigorous sprouts of from 3 to 5 ft. in height at this date. It should be interesting to note the future behavior, bark thickness etc. of these sprouts.

As mentioned before, our diplomatic authorities here give a clean bill of health to W. E. Dieseldorff. Although German (with some Jewish blood), he is not in any way connected with the black list; a cause of considerable embarrassment to him is the fact that a concern which bought out his uncle's interests, and which is known as Dieseldorff & Co., Sucs., is on the black list. W. E. Dieseldorff, however, is generally well thought of in allied circles; I refer in particular to Mrs. R. W. Hempstead, whose son is a colleague of John Smith in the Canadian R. A. F, and who accepts W. E. Dieseldorff as pro-British.

Accordingly, tentative plans have been made with Dieseldorff to make experiments next year with 100-200 Krukoff # 100 seedlings at 16 properties he has, either in Coban, Tactic or other damp parts of the Vera Paz, at altitudes ranging from 500 to 5500 ft.

Also 100-200 Krukoff # 100 seedlings may be tried at Finca Seamay of George Koester. (the finca 3,500 ft. and about 4 hours from Coban by car.) Koester is an Englishman who also has a son in the Canadian R. A. F.

Besides the above, we plan to try 100-200 Krukoff # 100 plants in Mocca, altitude 3,400 ft.; Los Alpes, 3,200 ft.; and Chicoyou 4,200 ft. The former two are about 3 hours from Coban towards Panzos, by car. The latter is in Coban. All three belong to Mrs. R. W. Hempstead & family.

As many of these experiments as possible will be carried out on virgin land.

It has been made clear that the arrangements for the above experiments are tentative, depending on how our nurseries come along at Naranjo between now and 1942. Probably the best month to take these plants to Coban will be July of next year, during the period of our canicula in Chicacao, when we have two weeks without rain.

Nothing had been said to the above enthusiastic co-operators about the price of seedlings. But as mentioned before, I hope they will be given away as we really should profit greatly in the long run by observing how these experiments result in various regions and altitudes of the Vera Paz.

Of experimental plantings started previously in Coban: At Chicoyou, in Coban, there are 32 grafts presumably left there by Franke two years ago. These are in good condition, although they appear to have been given little attention and there were many weeds growing about them.

At Los Alpes two trees are growing from seed left there by Col Ruehl, I presume in 1934. One of these is the largest tree of its age I have seen in Guatemala. Although only 7 years of age from the seed, it is 28 ft. tall, and has a diameter of 6 1/2 inches. It looks like a typical "Coban Ledger".

I have taken bark samples of these two trees and also two more *Succirubra* types from Sachamach, which I will send up to you when they are dry.

On the whole, the possibilities in Coban look most promising. In 1942, perhaps our first choice with plants of Krukoff # 100 that do not go out in the field at Naranjo, should be Coban.

With best regards,

Very truly yours,

F. Rosengarten Jr.

c. c. Dr. Popenoe.

Apartado Postal 284,
Guatemala.
September 6, 1941.

Mr. Harold Williamson, Esq.,
United States Consulate, Guatemala.

Dear Mr. Williamson:

Following our conversation of today, I take pleasure in sending you a list of our Cinchona co-operators. Our closest co-operators are; (1) Mr. Gordon Smith of finca Moca, Guatemala; finca Helvetia, Retalhuleu; and finca Patzulin, Palmar. (2) Mr. Owen Smith, of finca Panama, Guatemala. (3) Mr. L. L. Pettersen, of finca El Zapote, Escuintla.

The above three persons are by far our most important co-operators to date, in that they have been interested in the project for several years, and are already beginning to show promising results.

In addition to these, we have contact with the following individuals to a considerably lesser degree; i. e., we have either given them small quantities of seed, or are interested in making future Cinchona experiments on their properties, or both: (1) Mr. Manuel Herrera, of finca Velasquez; (2) Messrs. Carlos, Rafael and Arturo Herrera, who have properties in the Quiche; (3) Mr. W. E. Dieseldorff of Coban; (4) Mrs. R. W. Hempstead and her son Alan, of Coban; (5) Mr. George Koester of finca Semay, Senahu, Alta Verapaz; and (6) Mr. Whitehead of Cantel, Quetzaltenango.

Contacts of former years also include Mr. Pedro Cofino of Antigua, the finca El Porvenir, San Marcos, and Miss Rosita Dieseldorff and Mr. Gustavo Helmrich of Coban.

Also, we have given large quantities of seed to Don Mariano Pacheco, the Director General de Agricultura, who has in turn distributed these seeds as he has seen fit to finqueros here in Guatemala.

Our connection with Mr. Gustavo Helmrich of finca Samac, Coban, is as follows: in 1934, Helmrich was given seeds of Cinchona Ledgeriana (the highest yielding variety of Cinchona), by us. From these seeds he has succeeded in raising about 90 magnificent Cinchona trees. The especial advantage of this block of trees is that it can be isolated completely from inferior hybrid Cinchona trees which might otherwise cross pollinate with the pure C. Ledgeriana, thereby giving seed of questionable value. Helmrich formerly had seeds of hybrid type at Samac, but because of an arrangement with us, he has cut down these trees. Helmrich also gives us the exclusive right to collect the seed from these 90 Cinchona Ledgerianas during 1941, 1942 and 1943. In return, we pay him \$ 200 on the first of January of each of these years. We also have the exclusive right to cuttings from these trees, for which we pay him ten cents a cutting.

There are also trees growing today from the ~~original~~ seeds of Cinchona Ledgeriana (1934) at finca Helvetia,

but unlike the trees at Samac, the Helvetia trees are exposed to cross pollination by many undesirable hybrids, and so can by no means be considered as pure a source of seed as those from Samac.

Accordingly, for the next two years at least, until our own carefully placed seed gardens on the west coast of Guatemala can yield seed, the Samac Cinchona seed is of the utmost importance to the development of Cinchona Cultivation in Guatemala. We sow most of these seeds ourselves, and also pass the rest along to the most likely co-operators.

I know you are a very busy man, so I have made the above remarks as brief as possible. Some time soon, however, I do hope that you and Mrs. Williamson will come and pay us a visit at Finca El Naranjo, Chicacao, to have a look at what we are doing.

In the meantime, please count on us to co-operate with you as fully as possible in every way in our effort to push this project ahead so that it may some day be of value to the National Defense.

With best regards,

Sincerely yours,

F. Rosengarten Jr.

For Experimental Plantations Inc.,
Finca El Naranjo, Chicacao.

September 8, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

I am attaching a letter from Dr. Krukoff which is in answer to your inquiry about cover crops. An extra copy is being sent to you by regular mail. As we have frequent contact with Francis Peek & Co., I would suggest that when you have decided about the quantity and type of material which you wish to try, that you let us know and we will write to Francis Peek & Co.

I have several of your letters to acknowledge.

Your letter of August 25, 1941, paragraph 5. I realize that Sr. Zapata will probably have to be handled very carefully, and that as you point out, he will not be any too welcome as far as the Guatemalan Government is concerned. I see no reason to give him plant material but can see no objection to a few seeds. I have written to Dr. Popenoe in this connection and asked him to pass along to you his advice on how far we should go with Sr. Zapata.

Hoehn's memo. of August 15th and 16th, 1941, covering his trip over the area between Naranjo and Zunil was read with a great deal of interest. Probably by the time that we will be able to get together this fall, you will have some fairly definite ideas as to what land may be of real interest.

Receipt is acknowledged of your letter of August 24th with copies of letters dated August 21st, addressed to Helvetia and Panama. It certainly should be impressed on those who are cooperating with us that they should be well stocked with *Succirubra* seedlings. I assume, of course, that there is no shortage of the seeds themselves.

Your letter of August 30th. I will certainly do my best to get the contract with Owen Smith

Mr. Frederic Rosengarten, Jr.

-2-

September 8, 1941

straightened out. Mr. Perkins does not seem to be greatly worried about this, but I judge from your letter that you think Owen Smith really believes that he is entitled to 10% of all worthwhile material in Guatemala. That certainly was not the intention of the contract as I understand it.

I note also your letters to the Cooperators arranging for plantings at different altitudes.

It seems that the planting program that was laid out last year has been of great help to you. I would certainly suggest that if we can possibly get Dr. Popenoe and Dr. Krukoff down together, it would be extremely helpful to do the same thing for the next year, i. e. lay out a definite program for field and nursery work, and also a research program to guide Mr. Pennock. I am sure that both Dr. Popenoe and Dr. Krukoff would be glad to cooperate with us.

Yours very truly,

R. P. *RHS* ^{Luens}

cc Mr. Perkins
Dr. Popenoe

Finca El Naranjo,
September 15, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of yours of September 8, 1941.

Re. the cover crops mentioned in Dr. Krukoff's letter of August 30, 1941: Benitez is familiar with both Dolichos Hessei and Indigofera endecaphylla. He says the former grows so slowly in Guatemala, even on the low coast, that he does not think it is worth our while. He has more faith in the latter, however, which he thinks may possibly be obtainable at this time in Guatemala. As soon as we can check up on this, I will inform you.

I do not think that Owen Smith sincerely believes he is entitled to 10 % of all worthwhile Cinchona material "which Merck now controls in Guatemala, or may bring in or acquire, as long as it has use of Los Andes". I am sure, however, that he wants a clarification of this issue.

Incidentally, with the death of Mr. Gordon Smith and the coming resignation of Mr. Alberto Bianchi as Administrator of Mocá (due to ill health), the Gordon Smith Organization will have quite a gap to fill. I am told that Mr. Lind, the late Mr. Smith's partner, who is now in England, may return to Guatemala to head the Organization here.

I am at present working on a program for next year, which will be submitted for criticism and approval when it is completed.

Jorge Benitez and I went to Velasquez (altitude 910 ft.) last Thursday to plant out 497 seedlings of Krukoff # 100.

Owen writes me he is about to plant out some Krukoff # 100 at 2000 ft., in Panamá. This coming Thursday we plan to bring 250 Krukoff # 100 over to Helvetia (altitude 3000 ft.) to be planted out.

Enclosed please find the rainfall statistics for August 1941. It is interesting to note that whereas from Jan. 1 to August 31, 1941, we have had 110.33 inches, during the same period of 1940 we had only 75.88 inches.

With best regards,

Very truly yours,

F. Rosengarten Jr.

P. S. As the source of Indigofera endecaphylla is somewhat indefinite here, to insure action on this, I suggest you write at your earliest convenience to Francis Peek & Co., P. O. Box 465, Singapore, and request 10 lbs. of seeds of this cover crop, which could then be sent directly to El Naranjo. Gracias.

Dr. Papenfuss

Finca El Naranjo.
September 22, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I have just been over carefully with Benitez the Krukoff material that should be ready to be planted out in the field in 1942, and we have come upon the following results:

KRUKOFF SEEDLINGS READY TO BE PLANTED IN FIELD MAY, JUNE 1942	289,191
KRUKOFF SEEDLINGS READY TO BE PLANTED IN FIELD SEPTEMBER 1942	70,000
	339,191

This total is considerably smaller than the total we had anticipated; nevertheless it still represents a good sized amount of valuable material.

The fact the total is smaller, however, has led us to the conclusion it would be wiser to plant the Krukoffs out in the field in 1942 at 5' by 5', and not 4' by 4'.

At 5' by 5' the Krukoff seedlings would undoubtedly have more opportunity to grow and develop. Also, as far as 1942 is concerned, we are going to have more than enough land prepared for the material on hand.

This fact is demonstrated as follows: in 1942, in addition to the 339,191 Krukoff seedlings previously mentioned, we should have about 5000 additional plants to go out in the field. (Including grafts, Malay Ledgers etc.) This makes a total of, let us say, 344,000.

Land is already being prepared to receive this total. 1 1/2 caballerías of virgin land between 5,300 and 6,300 ft. have been opened up, according to plan. 1 caballería of cafetal between 3,800 and 5,300 ft. is almost completely prepared.

In the 1 1/2 caballerías of virgin land, if we plant at 5 foot centers, we find there theoretically should be space for 1,742 trees per acre. Discounting 25%, however, for barrancos, logs etc., we find we can count on 1,306 trees per acre in this region. In the 166 acres (1 1/2 caballerías), we have space therefore for 216,796 trees at 5 foot centers.

In the caballería of cafetal we can count on a 5% loss of space on account of roads etc. Thus in 1 caballería, or 111 acres, we can count on 1,655 trees per acre in the cafetal, i. e. space for a total of 183,705 trees.

Therefore: In 1 1/2 caballerías of virgin land at 5' by 5'	216,796
In 1 caballería of cafetal at 5' by 5'	183,705

Total trees

400,501

Thus for 1942's planting out in the field, we have prepared and are preparing space for 400,501 plants, provided we plant at 5' by 5'; we calculate we will have, however, only 344,000 plants to go out in the field next year; i. e. space for 56,000 plants will be held in reserve (probably in the cafetal) as a margin of safety for 1942's planting. This additional space can always be used to advantage for 1943's planting.

Undoubtedly, the Krukoff plants can only profit by being planted at 5' by 5', instead of 4' by 4'; and as we are definitely not cramped for land next year, having less available plants than we thought we would have when we decided on the 4' by 4' distance, the soundest and most logical thing to do to push ahead the develop of the valuable Krukoff material would undoubtedly seem to be to plant at 5' by 5', instead of 4' by 4' in 1942.

This is a practical and careful decision that has been made here in the field. Benitez and Hoehn both feel that the Krukoff plants will have much more chance to develop at 5 foot centers.

As the work of staking out the proposed planting holes requires considerable time, we should get on with this work at once.

Consequently, I would appreciate it if you would give me your formal approval of the above change in planting distance, as soon as possible so that we can get on with this important task.

Very truly yours,

F. Rosengarten Jr.

P. S. As the plantings made in 1941 at Naranjo are all at 4' by 4', we already have started a good sized experiment at this closer planting distance, to help guide us in our future planting efforts in the years to come.

Dr. Popenau
Finca El Naranjo,
September 22, 1941.

Mr. R. P. Lukens,
Merek & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of yours of September 17, 1941. Enclosed please find a record of Plantings that exist in Guatemala outside of Naranjo, which you mention in this letter; also enclosed are summaries of (a) our general Succirubra Stock at present, and (b) Ledger Seedlings at Naranjo in Seedbeds and Nurseries as of September 15, 1941.

I am sending you by regular mail the latest "Individual Tree Records." By next week, you should receive by Air Express the 4 samples I took at Coban in early September.

I am at present working on a detailed Inventory of the Krukoff material at Naranjo. The final summaries are as follows:

KRUKOFF MATERIAL AT NARANJO, IN SEEDBEDS AND NURSERIES
(as of September 20, 1941.)

(1)	In Seedbeds (estimated)	373,885
(2)	In Lower Nursery at 3" by 3"	150,346
(3)	In Lower Nursery at 6" by 6"	54,444
(4)	In Esterlina Nursery at 6" by 6"	106,066
(5)	In Pump Nursery at 6" by 6"	25,935
TOTAL (estimated)		710,676

Total Krukoff planted out in field during 1941 amounts to another 6,438.

The completed Inventory plus future plans for these seedlings will be sent to you upon their completion. I feel sure the above totals represent the most accurate count we have had as yet of the Krukoff material, thanks for the most part to the painstaking assistance of Alejandro Hartleben.

Mr. Zapata arrived here Friday. After a brief look around, he left on Saturday for Guatemala and will return here Tuesday with Mr. Pennock to stay until Thursday when he will go to Helvetia. He then plans to leave for El Salvador on Sunday, to the best of my knowledge.

Very truly yours,

F. Rosengarten Jr.

D. Popenoe

Finca El Naranjo,
October 3, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of your cable of October 1, 1941, "Planting of stock in field position on five foot centers approved." I thank you for your prompt reply, as now we can get on at once with this important work of "staking".

It looks as if we will be obliged to put on another exhibition in the National Fair on November 16.

Most of the stuff I used last year, I will use again. But I would appreciate it if you would send me down, (preferably by Air Express), 2 or 3 colorful posters re. the Cinchona, or the manufacture of Quinine Sulfate etc. They would add zest to the old set-up. Any contributions from Rahway along this line will be gratefully received.

Enclosed please find a summary entitled "Grafting totals of grafts made in 1941." You will note our over-all average up to the present time is 49%. By next May, this average will undoubtedly be nearer 40%. (If not below it.)

We must admit we have quite a bit of improving to do, as far as grafting is concerned.

Fortunately, we have 16 grafts of H-1239-G (17.6%) in the field at El Naranjo, and 2 in the field at the Merck Area Panamá. Material from these 18 trees is being grafted at present.

It is encouraging to think we have this source of valuable material for the future. For example, if from the 1941 grafts of H-1239-G, we can obtain 200 living 17% plants, and by 1944 from each of these 200 we obtain 20 successful grafts, we will then have 4000 17% grafts; then, if by 1947 we can obtain 20 successful grafts from each of these 4000, we will have 80,000 17% grafts. If by 1950 we can obtain 20 successful grafts from these 80,000, we will have 1,600,000 17% grafts, of H-1239-G. From then on, we might be able to expand tremendously. By 1953, 32 million 17% grafts, apart from Krukoff seedlings, other classes of grafts etc., theoretically might be possible, if we should ever wish to go so high. (Which, I imagine is most unlikely.)

This all sounds quite simple, that is, up to 1950. But we undoubtedly will have many difficulties. It is up to us, however, to (1) markedly improve our grafting technique, and, (2) carry out our grafting on a cheaper scale by teaching more humble employees to graft.

Both (1) and (2) will probably be realized gradually. It is up to us, however, to see to it they are achieved effectively!

With best regards, I am,

Very truly yours,

FR
F. Rosengarten Jr.

November 18, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

I have had a chance to go over our program again with Mr. Perkins and he has made a few suggestions, which should be incorporated in our research program.

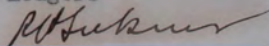
On page 2, item A-2, which covers the grafting plan, it is suggested that we start systematic work on the results obtained by grafting during different seasons. I believe some work has already been done but probably not in a systematic way.

The second point raised was about the seed garden mentioned on page 3, item A-6. This is to work out, with the owner of the property on which the trees are placed, an arrangement which will insure us the seeds over a long period of time. This might well take the form of a long term lease, say for a period of 10 years. Whether or not the Smiths want to make such a lease, I do not know and could only be determined by discussion with them. Probably this agreement should also contain some reference to cuttings in case we wish to take these.

We should also add to our program, experiments covering second growth. Mr. Pettersen has made the statement that he is definitely going to do this, but we believe it should be experimentally at least, on our program as well. For this we should take some of the oldest trees of various varieties. Naturally it is not wise to take the very best stock we have, but rather some intermediate stock where we can afford the loss of a tree. Of course it should be a tree where we have assays of the bark.

On page 5, item 2, where we speak of the planting distance for grafts as 5 by 5, it is believed advisable to increase this to 8 by 8 where trees are being planted specifically for grafting stock. Where they are strictly field plants the distance is to remain 4 by 4 for Ledgers and 5 x 5 for Krukoff material.

Very truly yours,
R. P. Lukens



cc Mr. Perkins
Dr. Popenoe
Dr. Krukoff
cc regular mail to Apartado
postal numero 284, Guatemala
City

Finca El Naranjo,
November 25, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of yours of November 14, and 18, 1941.

I am very glad you had a chance to meet Mr. Stanwood and see Lancetilla.

Re. tree P-402, I find we don't have this tree in our records either. This was a tree sampled by Pennock (see his letter to you of September 9, 1941) and the record presumably was mislaid. I shall send you its record as soon as I can get it myself. The other bark samples mentioned by Pennock in this letter have all been properly entered in the I. T. Records.

In your letter of November 14, 1941, I note Mr. Perkins' authorization of purchase of Naranjito for from \$ 1600 to \$ 1700. I have discussed this with Hoehn, who will keep in touch with owner. You will recall owner said it would take him until January to get certain legal matters straightened out. By the time I get back from Costa Rica, i. e. end of December or beginning of January, we should be able to get action on this. In the meantime I will keep in touch with Jorge Sanchez about it.

I plan to leave for Costa Rica about December 10. Thanks for Mr. Rodriguez's letter. Dr. Popenoe has very kindly given me several letters of introduction to people of influence in Costa Rica. I intend to do as thorough a job as possible of getting bark samples and seeds of the wild *Cinchona* from Costa Rica as 2 to 3 weeks will permit.

I note authorization of extra payments to Benitez and Hoehn, for which I am grateful. \$ 100 will be passed along to each about Christmas time.

Re. your letter of November 18, 1941. Systematic work will be carried out to try to get as exact a line as possible on relative success of grafting during different seasons.

Your remarks are also noted re. arrangements to be made with owners of properties where seed gardens will be started in 1942.

Also experiments re. second growth. As noted in Mr. Pennock's letter of Sept. 9, 1941, two relatively high yielding Ledger Seedlings at El Nil, Helvetia have already been cut back for this purpose. (H-1217 and H-453.) I will try to send for Botanical Documentation under H-1217 and H-453. I will try to allow us to carry out a similar

experiment at Zapote on a larger scale.

The next Cinchona Meeting will be held on December 3, 1941, at Naranjo. These Meetings will be kept up, for the time being at least, primarily for the benefit of the Smiths, as Mr. Pettersen does not seem to exhibit much interest in them.

I note your remarks about the planting distances, which we will follow.

With reference to Dr. Popenoe's letter to you of Nov. 19, 1941, I certainly agree with him that a yearly visit by Dr. Krukoff to Guatemala would be of the utmost value.

Dr. Popenoe's visit to Naranjo about Christmas time will be of great value to us, especially with regard to studying the grafting problems with Benitez in the field, and laying out an experimental program with reference to technique.

I think Dr. Popenoe's suggestion that Hoehn be put in charge of fertilizing experiments in the field is very good.

All emphasis possible has been placed, and will continue to be placed on grafting all Ledgers 10% Q. S. and above.

Dr. Popenoe's letter to me of Nov. 20, 1941, re. grafting problem, is interesting and useful.

Re. Mr. Pennock's memorandum to me dated Nov. 9, 1941; I believe that when you were here we all agreed that we should carry on with the work Mr. Pennock had started on fertilizer experiments in the field, and also his budding experiments. I was under the impression, however, that we thought the nutrient solution experiment in the Stoeffel Seedbed too complicated and not significant enough, to continue with. Dr. Popenoe, when I saw him the other day, confirmed my opinion in this.

The Exhibit at the Fair was I believe, a success. We received another Gold Medal. Especially noteworthy, however, was a most interesting and stimulating conference given by Dr. Popenoe and Benitez on November 21. About 80 persons attended this conference. Experimental Plantations Inc. paid one half the expense (\$5) to bring over a few picked students from the Escuela de Agricultura in Chimaltenango. (For which Dr. Mueller was very thankful. After the fair, plant material was distributed to the Minister of Agriculture, the Director General de Agricultura, to Messrs. J. P. Armstrong, Williamson, Manuel Herrera, the School of Agriculture, and others.

Enclosed please find my translation of Hoehn's description of his recent trip to Maxbal. This report is most encouraging indeed. It seems that so far, the experiment at Maxbal has been a tremendous success, especially with regard to the Ledger seedlings. We should certainly do all we can to keep the experiment going at Maxbal.

It seems that Gantenbein Sr. is anxious to sell us

Maxbal for \$ 1500. Enrique Hoehn feels this might be a great bargain for us, as the property contains about 15 caballerías. Enrique is absolutely convinced Maxbal is the most favorable site for Cinchona he has ever seen.

However, we obviously don't want to commit ourselves in any way as far as Maxbal is concerned, until we get a further line on the development of the Ledger Seedlings in the field at Maxbal. In the Seedbeds, the growth of the Ledger seedlings has been phenomenal. Some seedlings, which were sown as seed in February 1941, now, 9 months later, are 27 inches tall, and healthy as well.

I have the utmost confidence in Hoehn's sincerity and honesty. Consequently, I think the continuing of the experiment at Maxbal is of paramount importance to the Cinchona Project in Guatemala.

Hoehn and I have talked over the Maxbal situation at some length, and here are our conclusions; our chief problem now is to carry on with the opening up of the Virgin Forest at Maxbal to make field plantings of Ledger Seedlings. Gantenbein Sr. would probably not be keen about this, if he were to receive no financial reward. An excellent arrangement to enable us to continue with the experiment at Maxbal would be, it seems to us, to pay Gantenbein Sr. \$ 100 for the right to cut down 100 cuerdas (about 10 acres) of virgin forest, and continue with the field planting work in January. If later we decide to buy the property, we would then have to pay \$ 1400 instead of \$ 1500. Such an arrangement would be reasonable and favorable to both parties it seems to us. If on the other hand, we don't make some such arrangement, Gantenbein Sr. might get disgusted and a potentially magnificent experiment might be lost.

I hope you and Mr. Perkins will approve of this arrangement at your convenience.

45,000 Izote have been planted at Naranjo in the past ten days.

I have just received your cable, "KRUKOFF JUST ADVISED HAD SENT BY AIREXPRESS FROM MIAMI RYANIA CUTTINGS TO YOU AT PALACE HOTEL MAKE PLANS TO GET IN GROUND IMMEDIATELY".

At once, I sent an urgent telegram to Mr. Gibson in Guatemala, and am sending our camioneta to Gibson's office to get the cuttings. Will you please in the future have Dr. Krukoff send such material to me care of Jose Gibson, 10 Calle Oriente # 7, Guatemala. Not to me at the Palace Hotel. If I am at Naranjo, Gibson can then deal with important material such as this more effectively if he is advised from the beginning.

Benitez is preparing boxes to receive the cuttings.

Very truly yours.

FRJr.

Report on condition of Cinchona plants at Hacienda Maxbal, Zone of Barillas. November 3-17, 1941.

Plants in the field. In the field I found the plants on the whole in excellent condition. Of the Krukoffs, 104 have died, 304 are living; those surviving are sturdy and range in height from 18" to 41" (with the exception of a few smaller plants). All plants are healthy and have well developed stems (up to 3/4 inch in diameter). All have large strong leaves.

Those which were planted in "pilón", i. e. with soil clinging to their roots, have made out better than those which were planted in bare roots. Those plants which were planted out in field directly from Naranjo seedbeds in bare roots have probably suffered the most.

Of the 50 African Ledgers which were planted in the field, 45 have survived. Probably 5 died as the result of the long and difficult trip in February 1941. Those living are from 20" to 23" in height. Almost all of these dried up somewhat at first, but then came back beautifully as sprouts. These Ledgers appear to be completely free from disease. Where there are only 2 sprouts, these have grown up to 14"; where there are many sprouts, the growth is from 6" to 8".

Plants in Nursery. Of the 538 Krukoffs which were planted in a Nursery Bed at 6" by 6", 355 survive, 183 having died. Those living range in height from 6" to 37". Some are weak, but most are strong and have large leaves. Perhaps the smallest have suffered from the excess dampness of the beds. In some plants, particularly the strongest, the leaves have a silvery color, which is not found in the plants in the field.

Seedbeds. Altogether, there are 5 Seedbeds; (2 of Krukoffs, 3 of Ledger Seed from Helvetia & Samac). On the whole these plants are in excellent condition.

The Krukoffs are fairly evenly developed, and range in height from 6" to 17". I calculate that there are 11,000 Krukoffs in these Seedbeds.

The Ledgers present a truly remarkable picture. I calculate that there are about 8,000 in all; they range in height from 4" to 27". One of these Ledger Beds contains only 100 plants or so, all the rest having died out presumably from excess dampness. The second Ledger Bed contains about 3000 plants from 4" to 16" in height; these plants have also suffered somewhat from the dampness.

The third Ledger Bed, however, is truly remarkable. This bed contains about 5000 seedlings, ranging in height from 6" to 27". This growth is extraordinary, as the seed were sown only 9 months ago. We have never seen growth to this on the Pacific Coast. The average height of Ledger seedlings sown at Naranjo nine months ago (in February 1941) is from 1" to 8".

The roof of "posh" leaves proved to be inadequate to combat the heavy rains. In the future a sturdier material for roofing will have to be obtained. Also precaution will have to be taken to insure first rate drainage. The position of the beds, i. e. running from east to west with the high side north has greatly helped the growth of the plants, in my estimation.

Work accomplished. As the Ledgers were so large, I began at once with the transplanting of these from the Seedbeds. I constructed 4 Nursery Beds, to the west of the Seedbeds, but facing in the same direction. In Bed # 1, 432 Ledgers were transplanted at 6" by 6". Bed # 2 is not yet planted. Bed # 3 contains 770 plants at 9" by 9"; Bed # 4 contains 1397 plants at 6" by 6". The Ledgers at 9" by 9" all have tremendous root development. In all 2599 Ledgers were transplanted by me, and many more Ledgers and Kru-koffs will be transplanted by Cristian Gantenbein Jr. during the next few days. This transplanting took place from November 9 to 12, 1941. The roofing was of "posh" leaves; "posh" leaves were also placed on South side to protect against sun.

On November 13, we made a general tour of inspection of the Hacienda Maxbal. First we went down to the beautiful lake, altitude 4000 ft., where it is considerably warmer. The soil here is rocky; some years ago there were small corn plantings in this neighborhood. About 150 meters above the lake there is a fine spot for a possible Nursery. From here we visited the part of Maxbal known as "El Aguacate". This is really the choicest portion of the finca. Perhaps the best spot for Nursery Work in the future. Water could easily be brought from a small lake nearby. The altitude here is 4300 ft. This spot is one hour by foot from the main rancho of the Hacienda. Near the lake I planted 8 Ledgers in the field, of about 8 inches in height. At "El Aguacate" I also planted 7 Ledgers in the field of about the same size.

On November 14, I started back to Naranjo, arriving there on November 17. (3 days by mule, 1 by car).

General Remarks. The rainfall at Maxbal is heavy and well distributed, the only dry months being March and April. It still drizzles even in these months.

The extraordinary growth of the Ledger Seedlings is very encouraging.

There is magnificent natural drainage in the soils at Maxbal, although they are far more clayey than Naranjo soils, and not volcanic in origin.

Finca "El Naranjo"
November 20, 1941.

E. Hoehn.

MEMO

To Mr. Lukens
From B. A. Krukoff

Date 11/28/41

Answering {
Your Memo }

Subject #41,999 - Cinchona

Herewith find copy of a self-explanatory
letter from the Philippine Islands re seeds of
Cinchona calisaya that we sent to them some time ago.

B. A. K.

Bak/Jd

cc - Mr. Perkins
Mr. Rosengarten
~~El Naranjo File~~

Dr Papuae ✓

COPY Nov. 28, 1941

September 11, 1941

Mr. B. A. Krukoff
c/o The New York Botanical Garden
Bronx Park (Fordham Branch P. O.)
New York, N.Y., U.S.A.

(Thru the Honorable, the Secretary of Agriculture
and Commerce, and His Excellency, the President
of the Philippines, Manila)

S i r :

With reference to your letter dated June 19,
1941:

I beg to inform you that of the total amount
of 140 cc. of Cinchona calisaya seed which you kindly
sent us in March, 1940, the results of the planting are
as follows:

Planting at Impalutao, Bukidnon

Lot No. -----	IB-350-E
Date Planted ---	April 4, 1940
Amount Sown -----	40 cc.
Medium -----	Sieved soil
Number of plants obtained ----	4,856 seedlings

Remarks:- Damping-off disease set in when
the seedlings were about 1-1/2 months old. This was
controlled with the use of tobacco ashes which were
applied by dusting over the seed flats. On August 31,
1940, there were 1,441 seedlings living with an aver-
age height of 4.5 cm. Out of this number only 138
survived for planting in the field. The plants were
set out on June 25, 1941 in the demonstration plot at
Impalutao. The young trees do not grow well, and on
top of this, they were observed to be susceptible to
the stem and leaf blight of Cinchona.

Planting at Kaatoan, Bukidnon

Lot No. -----	KB-128-E
Date Planted -----	April 4, 1940
Amount Sown -----	100 cc.
Medium -----	Sieved fresh forest soil
Number of plants obtained --	20,731 seedlings

Remarks:- Damping-off disease set in when
the seedlings were about 1 cm. in height but this was
also controlled by dusting over the seed flats with
tobacco ashes. The seedlings were pricked (lifted)
and transplanted in rows at 1 to 2 cm. apart in seed
flats which were treated with formalin solution of
1:50 strength. There were on August 31, 1940, 20,731

seedlings living with an average height of 4.5 cm. Out of this number, only 1,347 seedlings survived. On July 1, 1941, the plants had an average height of 36.5 cm. The difference of 19,384 seedlings died of Cinchona stem and leaf blight.

Very respectfully,

FLORENCIO TAMESIS
Director of Forestry

Finca El Naranjo,
December 1, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens;

I hereby confirm my cable to you of November 28, 1941,
"RYANIA SAFELY PLANTED".

The Ryania cuttings, which arrived in first class condition, were planted at Naranjo in the following fashion:

36, of about 10" in length, were planted in separate pots, in a mixture of virgin soil and sand. 25 of these with hormones, i. e. dipped in a solution of 1: 2000 Indole Butyric Acid. 11 without hormones. (The Indole Butyric Acid had been left in Guatemala by F. C. Armstrong.)

3 larger cuttings, of about 12" in length, were planted directly in a nursery bed in Huasibamba, after having been dipped in above solution.

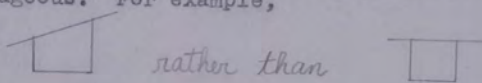
7 smaller cuttings of about 6" in length, were planted in a box filled with river sand. These also were dipped in above solution.

Total 46 cuttings. All but the 3 largest cuttings, (i. e. those in the nursery bed in Huasibamba.) are in Benitez's casita.

Benitez states the wood of the Ryania is extremely hard, the bark very thin indeed. Consequently, he feels it will be difficult for Ryania cuttings to develop roots.

On Thursday and Friday of last week, Benitez, Hoehn and I visited fincas Helvetia, Patzulín and Panamá. On the whole, the Krukoff seedlings planted in the field have improved considerably at all 3 of these fincas.

Some observations made by us during this trip, follow: (1) At Helvetia and Patzulín it would be worthwhile to obtain watering-cans in the nurseries with finer openings in the nozzle. (2) A roof for Nursery beds at Acultzingo has been constructed on a level plane. In general it was felt a slanting roof would be advantageous. For example,



(3) In the Nursery at San José, Patzulín, it was felt the soil was too sandy, and that humus should be added. (4) It was felt the seedbeds at Helvetia (Acultzingo), would benefit by a deeper

layer of virgin soil. The Helvetia people have remarked that the plants which come from Naranjo to Helvetia seem to have better root systems than those plants grown from seed at Helvetia itself; Benitez thinks this may be due to the fact more virgin soil is used in the seedbeds at Naranjo. (5) The importance of sowing *Succirubra* seeds continuously cannot be overlooked; Helvetia and Patzulín, for example, are very short indeed on *Succirubra* stock for grafting in May, June 1942. Fortunately, we will have extra *Succirubra* at Los Andes to give to these fincas, and also to Owen so that the general grafting of the *Cinchona* project will not be slowed up. (6) Owen Smith's largest field planting of Krukoffs is at a place called La Cumbre, where 2500 have been set in the field. The soil here is very good, but as the plants have been set in a very flat area, it was felt the location might be dangerous in the next rainy season unless some consideration be given to drainage.

The above remarks will be passed along to the co-operators at the next *Cinchona* meeting on Wednesday.

Enclosed please find the Individual Tree Record of P-402, mentioned in your letter of Nov. 14, 1941.

Also Meteorological Records for months of October and November 1941.

I have just received a small package of *Cinchona* Seed from Costa Rica; these seeds will be sown at once. These seeds were obtained by Dr. Krukoff from a Mr. Rodriguez in Costa Rica. I will endeavor to contact Mr. Rodriguez when I am in Costa Rica.

Very truly yours,

FR Jr.
F. Rosengarten Jr.

c. c. Dr. Popenoe, ✓
Dr. Krukoff.

P.S. I now plan definitely to leave for Costa Rica by plane from Guatemala on Dec. 10, 1941.

Best regards,
Fitz

[2 Dec 1941]

On Friday November 7, 1941, 2 experiments were carried out at Finca Helvetia that had been discussed on October 23, 1941, at Finca "El Naranjo" by Messres. Lukens, Popenoe, Krukoff and Rosengarten.

The experiments were as follows:

EXPERIMENT I.

In order to test an idea advanced by Mr. Pennock, i. e. that the quinine content of low-yielding Succirubra roots is increased when a high-yielding Ledger scion is grafted onto said roots, 3 of our oldest grafts in Guatemala, situated at El Nil, Helvetia, (grafted in 1936, planted out in 1937) were picked out and treated as follows:

(A) Our typical bark sample was taken from the stem of each (6" to 2 ft. from ground).

(B) Representative samples of bark were cut from the roots of each.

These two samples of each graft were then placed in separate packages, duly labeled and dried.

The 3 grafts chosen were the following:

- (1) H-465-G. Analyzed in 1941. Quinine Sulfate, 10.6%.
Wt. per Sq. Cm. Gr. 0.14
Cinch. S. 0.5%

As of Nov. 7, 1941: Height 10' 6"; Diameter 2 1/2".

From now on this tree, although previously erroneously labeled as H-465, will bear the label H-465-G.

- (2) H-458-G. Analyzed in 1941. Quinine Sulfate, 10.4%.
Wt. per Sq. Cm. Gr. 0.16
Cinch. S., 0.5%

As of Nov. 7, 1941: Height 11'; Diameter 2 1/2".

From now on this tree, although previously erroneously labeled as H-458, will bear the label H-458-G.

- (3) H-460-G. Promising looking tree, not yet analyzed.

As of Nov. 7, 1941: Height 15'; Diameter 2 1/4".

When the analyses of the root-bark of these grafts are compared to the analyses of our typical sample of each, we will be in a better position to judge the idea advanced by Mr. Pennock. If indeed the quinine content of the root-bark of a graft is definitely increased by contact with a high-yielding Ledger scion, it would imply that in the future we should give undivided attention to the vigor of our Succirubra Stock, when choosing it, rather than choose it on merits of (1) Vigor, and (2) Reasonable Quinine Sulfate yield.

Jorge Benitez points out that these roots may reasonably be expected to contain some Quinine Sulfate anyway, as when the first grafting was carried out at Helvetia, Col. Ruehl caused Benitez to use seeds of a 5% Q.S. mother tree when choosing Succirubra Stock for grafting purposes.

The dry weights of the samples sent up relating to this experiment are as follows, as weighed at Finca El Naranjo, Nov. 29, 1941.

	Grams.
H-465-G Typical Sample of stem.	19.65
H-465-G Sample of root-bark.	39.65
H-458-G Typical Sample of stem.	22.55
H-458-G Sample of root-bark.	42.75
H-460-G Typical Sample of stem.	15.6
H-460-G Sample of root-bark.	35.6

EXPERIMENT II.

The object of this experiment is to determine how the Quinine Sulfate yield of our typical bark sample of the stem compares to the total average Quinine Sulfate yield of a given tree.

To investigate this relationship, 3 Original Ledger seedling trees were chosen at El Nil, Helvetia:

H-630 Analyzed in 1941.
5.0% Quinine Sulfate.
1.6% Cinchonidine Sulfate.
Wt. per Sq. Cm. grams, 0.103

H-789 Analyzed in 1941.
6.1% Quinine Sulfate.
0.8% Cinchonidine Sulfate.
Wt. per Sq. Cm. grams 0.16

H-1222 Analyzed in 1940.
8.2% Quinine Sulfate.
0.6% Cinchonidine Sulfate.
Wt. per Sq. Cm. grams 0.12

First, our typical bark sample was taken of the stem of each of these three trees in the field. The trees were thereupon uprooted, and carried down to the Almacén at Finca Helvetia. Careful measurements were made. The bark was then stripped from each, and in each case was divided into three separate portions; (A) Root Bark, (B) Stem Bark, and (C) Branch Bark.

See attached photographs demonstrating how H-630 was treated.

It took 7 men, 3 hours and 15 minutes to strip the bark from the roots, stems, and branches of these three trees. By far the most time-consuming operation is the stripping of the bark from the roots.

All bark below soil surface was considered as Root Bark. All root bark was used except that from the very finest roots of less than 1/16" (approximately) in diameter.

All bark above soil surface on stem was considered as Stem Bark. All stem bark was used except that from the uppermost portion of stem, less than 1/2" in diameter. This latter bark was discarded.

The branches were cut off flush, and all Branch Bark was used except that from the smallest branches, or tips of branches, less than 1/2" in diameter. This latter bark was discarded.

The statistics for these three Original Ledgers follows:

H-630

Seed sown May 1934.

Crown: oval, compact.

Diameter measurements of stem were made at soil level and at foot intervals, as follows:

	<u>Diameter</u>
Soil level	3 1/4"
1 ft.	2 1/2"
2 ft.	2 1/8"
3 ft.	1 7/8"
4 ft.	1 7/8"
5 ft.	1 5/8"
6 ft.	1 3/8"
7 ft.	1 1/8"
8 ft.	7/8"
9 ft.	3/4"
9 ft. 6"	1/2"

Planted out in field Aug., 1937.

Branching habit: suberect.

As the upper tip of stem (i. e. that portion of stem from 9' 6" to 12' 6") was less than 1/2" in diameter, bark from this part of the stem was discarded. (As noted above).

The weight of the wet Bark of H-630 was as follows on November 7, 1941.

Root Bark	1,251 grams
Stem Bark (including typical sample 65 grs.)	1,344 "
Branch Bark	460 "

WET BARK, TOTAL WEIGHT: 3,055 grams. or 6.74 lbs.

The weight of the dried bark of H-630 on November 29, 1941 was as follows:

Root Bark	419.85 grams
Stem Bark (incl. typical sample 21.05 gr.)	431.75 "
Branch Bark	162.77 "

DRIED BARK, TOTAL WEIGHT: 1,014.37 grams or 2.24 lbs.

H- 789

Seed sown May 1934.
 Crown: Conical, compact.

Planted out in field May 1936.
 Branching habit: suberect.

Diameter measurements of stem were made at soil level and at foot intervals, as follows:

	<u>Diameter</u>
Soil level	3 3/4"
1 ft.	2 5/8"
2 ft.	2 5/8"
3 ft.	2 5/8"
4 ft.	2 3/8"
5 ft.	2"
6 ft.	1 3/4"
7 ft.	1 5/8"
8 ft.	1 1/2"
9 ft.	1 1/8"
10 ft.	1"
11 ft.	3/4"
12 ft.	5/8"
12 ft. 6"	1/2"

As the upper tip of stem (i. e. that portion of stem from 12' 6" to 15') was less than 1/2" in diameter, bark from this part of stem was discarded. (As noted above).

The weight of the wet bark of H-789 was as follows on November 7, 1941.

Root bark	1,222 grams
Stem bark (including typical sample	
75 grs.)	1,901 "
Branch bark	446 "

WET BARK, TOTAL WEIGHT: 3,569 grams
 or 7.87 lbs.

The weight of the dried bark of H-789, on November 29, 1941 was as follows:

Root bark	421.57 grams
Stem bark (incl. typical sample 26.7 gr.)	668.57 "
Branch bark	168.22 "

DRIED BARK, TOTAL WEIGHT: 1,258.36 grams
 or 2.77 lbs.

H-1222

Seed sown May 1934.

Planted out in field May 1936.

Crown: Conical, loose.

Branching habit: suberect.

Diameter measurements of stem were made at soil level and at foot intervals, as follows:

Soil level	Diameter
1 ft.	4 3/4"
2 ft.	2 7/8"
3 ft.	2 1/2"
4 ft.	2 1/8"
5 ft.	1 7/8"
6 ft.	1 1/2"
7 ft.	1 1/4"
8 ft.	1 1/8"
8 ft. 6"	1"
	1/2"

As the upper tip of stem (i. e. that portion of stem from 8' 6" to 11' 6") was less than 1/2" in diameter, bark from this part of stem was discarded. (As noted above).

The weight of the wet bark of H-1222 was as follows on November 7, 1941.

Root bark	1,647 grams
Stem bark (incl. typical sample 53 gr.)	1,636 "
Branch bark	594 "

WET BARK, TOTAL WEIGHT: 3,877 grams
or 8.55 lbs.

The weight of the dried bark of H-1222, on November 29, 1941 was as follows:

Root bark	574.9 grams
Stem bark (incl. typical sample 18.4 gr.)	539.55 "
Branch bark	205.35 "

DRIED BARK, TOTAL WEIGHT: 1,319.80 grams
or 2.91 lbs.

The bark in Experiment II above, was dried in the "Naranjo Drier" in the following fashion:

Root bark and Branch bark	24 hours
Stem bark	30 hours

At an average temperature of 130° Fahrenheit.

Finca "El Naranjo"
December 2, 1941.

F. Rosengarten Jr.
F. Rosengarten Jr.

December 2, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

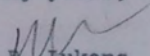
Attached please find assays and bark thickness on Zapote samples sent to Rahway by you on November 3, 1941. The great majority of these samples are not very promising - about 9 or 10 are above 5%. You naturally will pass the results of these samples along to Mr. Pettersen.

I am attaching a copy of a report sent to Dr. Krukoff on the status of the Krukoff seedlings in the Philippine Islands. It is about the usual story, and I believe requires no comment.

I understood that the tree records covering the 35 samples were coming to us by regular mail. To date these have not been received.

Do you know what became of Pennock? I understood that he was going to leave shortly after I did and that he was coming thru New York on his way to Puerto Rico. To date I have not seen him.

Very truly yours,


R. F. Lukens

RPL:CS

cc Mr. Perkins
Dr. Popenoe

cc to Apartado ^{postal} numero 284 by regular mail

Dec. 2, 1941

ASSAYS ON 35 CINCHONA BARK SAMPLES RECEIVED Nov. 13, 1941

<u>Sample No.</u>	<u>Thickness</u> <u>mm</u>	<u>% Quinine</u> <u>Sulfate</u>	<u>% Cinchonidine</u> <u>Sulfate</u>
Z-627	2.1	3.7	5.2
Z-750	1.4	1.9	2.4
Z-751	1.2	2.5	2.1
Z-752	1.4	3.1	4.3
Z-753	1.5	3.02	1.1
Z-754	1.4	2.8	3.4
Z-755	1.2	2.1	3.3
Z-756	1.0	4.1	3.0
Z-757	0.5	2.4	5.8
Z-758	0.5	2.5	5.5
Z-759	0.6	0.8	6.5
Z-760	0.8	3.7	5.4
Z-761	1.0	6.3	4.2
Z-762	0.9	5.4	3.7
Z-763	0.8	1.6	5.1
Z-764	0.6	5.0	4.2
Z-765	0.9	2.0	5.3
Z-766	0.6	2.6	3.4
Z-767	0.5	3.0	6.0
Z-768	0.4	5.8	3.1
Z-769	0.6	(3.3% Qui. & Cde Sulfate)	
Z-770	0.6	3.7	2.1
Z-771	0.7	6.6	4.3
Z-772	0.5	7.9	5.8
Z-773	1.0	7.1	2.9

Assays on 35 Cinchona Bark Samples -2-

<u>Sample No.</u>	<u>Thickness mm</u>	<u>% Quinine Sulfate</u>	<u>% Cinchonidine Sulfate</u>
Z-774	0.5	(4.7% Qui. & Cde Sulfate)	
Z-775	0.6	8.6	3.9
Z-776	0.7	5.4	2.5
Z-777	0.5	8.6	4.0
Z-778	1.0	4.2	7.8
Z-779	0.8	3.7	5.0
Z-780	0.7	2.7	3.7
Z-781	1.2	3.6	5.7
Z-782	0.6	3.7	5.7
Z-783	1.1	3.9	6.0

cc - Mr. Rosengarten
Dr. Popenoe
El Naranjo File
Mr. Perkins

December 3, 1941

Mr. R. P. Lukens
Merck & Co., Inc.
Rahway, New Jersey

Dear Mr. Lukens:

As you may know, Dr. Major has been interested in finding out what has been done on hormones which tend to speed up the healing of wounds on plants. We have had considerable correspondence with various specialists in this line.

One of these specialists, who has done active experimentation work in this country, stated that he found that covering the wounds and keeping them in darkness tends to help their healing. Our Director here, Dr. Robbins, who, as you may know, is a physiologist, tells me that he is personally acquainted with this gentleman and would accept his statement without reservation.

It occurs to me that perhaps Mr. Rosengarten might wish to make experiments by covering about 25 wounds (after the bark for analysis has been taken) with suitable material and leaving 25 other trees with wounds uncovered.

I have given thought to the type of material that might be used for covering the wounds on trees in the tropics and my suggestions follow:

- (1) Black roofing paper which, presumably, may be easily secured.
- (2) Plastics - thin, flexible sheets, water proof and opaque. (I have not seen these but I hear that some are manufactured now by the DuPont people. Doubtless you can find some better material. The plastics, of course, are expensive, but it is quite possible that they may be used over and over again. This must be ascertained by actual trial.)

I am passing this information on to you for what it may be worth to you and Mr. Rosengarten.

Very truly yours,

B. A. Krukoff

Bak/Jd

December 4, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

On our research program it is contemplated that we do some experimental work on the cuttings, using some of the plant hormones to develop root growth. You will remember that most of the Washington work was done with Alpha-Naphthalene Acetic Acid, and, therefore, I would suggest that we stick to this in our experimental work. Unfortunately we have no published literature on the use of Alpha-Naphthalene Acetic Acid, but I am sending you attached, literature on Hormodin Powder, which may help to some extent.

I have prepared for you and am sending by air express to Mr. Gibson, approximately one kilo of Alpha-Naphthalene Acetic Acid, which is diluted with talcum powder in the proportion of one of the acid to 1000 of the talcum powder. In order to use the preparation, freshly cut plant material is simply dipped in the powder, enough adhering to the plant and plant juices so that a dose is obtained.

I am also sending you one ounce of the Naphthalene Acetic Acid in the form of Lanum Paste. This can be tried in another experiment. I am enclosing a small sketch which will probably explain this better than I can verbally. To use the Lanum Paste, the plant material which you are going to use is treated while still on the tree by putting a minute quantity into the stem. Immediately below the point where the paste is injected, there will form in a few days, a callous ring. After the ring is formed, cut immediately below, dip in the powder and plant. The above is highly experimental and may not be of great value.

In addition I am sending you Indoleacetic Acid in Lanum Paste, which is to be tried on grafts. This is used by simply rubbing a little of the paste on the freshly cut area of the root stock where the graft is joined. Naturally this is not to be used too widely as it is simply for experimental purposes. The same applies

Mr. Frederic Rosengarten, Jr. 02-

December 4, 1941

to the Alpha-Naphthalene Acetic Acid.

Attached please find copy of a letter written by Dr. Krukoff concerning plant wounds. It would be of interest to try this on trees that we have sampled.

Yours very truly,

R. P. *W. Perkins*

RPL:CS
enc.

cc Mr. Perkins
Dr. Popenoe ✓
Dr. Krukoff

cc by regular mail to
Apartado postal numero 284
Guatemala City

Main Office:
RAHWAY, N. J.

NEW YORK
161 Sixth Avenue

PHILADELPHIA
916 Parrish Street

ST. LOUIS
4528 So. Broadway

MERCK & CO.
INC.
MANUFACTURING CHEMISTS

Cable Address:
MERCK NEW YORK

Works
RAHWAY, N. J.
PHILADELPHIA

In Canada:
MERCK & CO. Limited
MONTREAL
TORONTO

PLEASE REPLY TO
NEW YORK, N. Y.

December 5, 1941

Dr. Wilson Popenoe
Antigua
Guatemala, C. A.

Dear Dr. Popenoe:

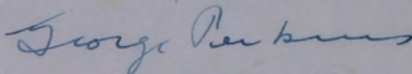
Thank you very much for your letter enclosing the photographs. I don't know why you apologize for the pictures - I think they are fine - and they are fully as good as anything I got from Biener in the old days.

I have gotten most interesting reports from both Luke and Krukoff and gather that things are progressing well, which I hope to see for myself soon.

We are planning to go down to Guatemala about the middle of January, taking a real vacation this time spending three or four weeks. In fact it is going to be almost an invasion as we are taking our eldest daughter and a friend of hers along with us. I hope that sometime during our stay we will have a chance to see you and that you won't be too much involved in Honduras.

With kindest regards to you and Mrs. Popenoe,

Sincerely yours,



George W. Perkins,
Executive Vice President

GWP/ED

11
apto 284
Finca El Naranjo,
Dec. 5, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

Enclosed please find (1) Notes and photographs concerning 2 experiments carried out at Finca Helvetia Nov. 7, 1941 by Benitez and self. The bark itself of these two experiments will be sent to you early next week by Air Express. (2) Photographs made by Hoehn at Maxbal, Barillas in early November 1941 which back up what he has to say about phenomenal growth of Ledger seedlings on their own roots at Maxbal.

I acknowledge receipt of yours of November 28, 1941 re. the Erythrina. I have passed this information along to Owen Smith who will locate the trees mentioned. Then when I return from Costa Rica in early January I will take Benitez to collect cuttings to be planted at Naranjo in nursery position.

We are at last getting action on "Naranjito". Mr. Fernandez wrote Enrique Hoehn a letter on Dec. 2, stating his expenses at Naranjito thus far have been \$1,639. (i. e. he has loaned this amount to the Indians living there.) This sum plus the \$150 which Mr. Fernandez will be obliged to pay the Indians to induce them to leave equals \$1,789. In addition, Mr. Fernandez's lawyer's fees to arrange sale will be \$100, making a total of \$1,889. Mr. Fernandez wrote he would not be interested in selling the property, therefore, for less than \$1,750. If this figure is satisfactory to us, he agreed to take the matter up with his lawyer in Guatemala on Saturday (tomorrow), and have the property ready to transfer in middle January.

Hoehn pointed out Fernandez is dead serious in what he says, so in order not to have this important matter drag, I had Hoehn tell Fernandez verbally that \$1,750 was our limit; accordingly, as I am leaving for Costa Rica on Wednesday, this matter will be moving along during my absence from Guatemala. Evidently the procedure with Fernandez' lawyer will take at least 40 days.

I felt justified in the above action, as in your letter to me of Nov. 14, 1941 you state Mr. Perkins has authorized us to go ahead with Naranjito, it being understood the price will be in the neighborhood of \$1,600 - \$1,700.

As soon as I return from Costa Rica, I will consult Sanchez at length re. Naranjito.

During these days Don Pancho is studying the water question at Naranjito.

December 22, 1941

Mr. Frederic Rosengarten, Jr.
Finca El Naranjo
Chicacao, Such.
Guatemala, C. A.

Dear Mr. Rosengarten:

I have several letters to acknowledge and will not attempt to answer them in order but as I have them in front of me.

Your letter of December 9th with attached list of bark samples was received and the samples themselves have also arrived. Instructions have been passed along to be sure to obtain the weight on each sample.

Dr. Krukoff called me Friday morning and advised that there is going to be a delay in obtaining the Ryania seeds and it is very questionable whether we will obtain any from this year's crop. Nevertheless we will go ahead with the purchase of Naranjito, as sooner or later there will be plants to be taken care of in that area.

With your letter of November 25th there was enclosed a translation of Hoehn's report on the trip to Maxbal. The report and enclosed photos were extremely interesting. Needless to say the area looks very promising. You brought up the question of the purchase of Maxbal, feeling that the entire property could probably be bought for \$1400 - \$1500, and suggesting that we might make a partial payment of \$100. As the area is so promising, we believe it advisable to try to get an option to buy. Mr. Sanchez will probably have to work out this contract and it should not present too many difficulties. Our suggestion is this, for a nominal sum, say \$100 - \$150, you may be able to obtain an option which possibly might be extended over a period of two years. This will probably give us sufficient time to see how the trees do in the field position. If before the two years are up we still believe the place is worth while, we can take up the option and purchase the property. If we believe the property is questionable, we can let the matter run for two years. Details would have to be

Mr. Frederic Rosengarten, Jr.

-2-

December 22, 1941

worked out, naturally, with the owner. In any case it seems that a period of two years should be ample for us to make a decision. You are authorized to try to work out the arrangements described above.

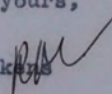
In your letter of December 1st you cover the Ryania cuttings and also speak of the treatment with plant hormones. I would suggest that in the future, until we know more about the actual plant hormones, the treatments be kept down to a fewer number.

I acknowledge your letter of December 5th, attached to which were photos and notes covering two experiments carried out at Helvetia. I do not believe that these need comment at this time. I will pass them along to Dr. Krukoff asking whether he has any suggestions to make.

No decision has as yet been made on how far we will go at El Salto. The matter is being held up until an estimate can be worked out on the cost of installing pilot plant equipment. I hope that after the turn of the year, we will have enough information to make a decision.

I wish to send to you and your wife, all possible best wishes for a Happy Christmas and a good New Year.

Very truly yours,

R. P. Lukens 

RPL:CS

confirmation by regular mail
to Apartado postal numero 284,
Guatemala, C. A.

cc Mr. Perkins
Dr. Popenoe
Dr. Krukoff

December 26, 1941.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

This is just a line to let you know that I am back safely in Guatemala with the following material from Costa Rica: (1) 75 bark samples of the Wild Cinchona of Costa Rica, which are being dried at present and will be sent up to you next week. (2) Seeds from 29 of these 75 trees sampled. Also seeds which the Director of the National Museum in San Jose very kindly gave to me, which came from the young trees he has growing at the museum. This Museum Director, Don Juvonal Valerio R. (Rodriguez), is very enthusiastic about the future of Cinchona in this hemisphere, and should be a very fine contact for us in case we should desire to carry out further work on the Cinchona in Costa Rica.

The Costa Rican Government Officials, thanks to letters given me to them by Dr. Popenoe, were extremely courteous and co-operative. The Director of Agriculture, Don Luis Cruz, gave me a letter enabling me to get the seeds through the customs without difficulty.

In return, I gave them some pamphlets and Ledgeriana seeds. They are all anxious to hear the results of the 75 samples you will receive shortly.

The seeds I brought back from Costa Rica will be treated as follows: the seeds from the 29 Individual Wild Trees, collected by me, will be sown tomorrow at Naranjo. That is all but a portion of the seeds of R-61 and R-73, from which trees I collected quite a few seeds. This portion of R-61 and R-73 will be mixed with the seeds given me by the Director of the Museum at San Jose, and then Respectable quantities will be given to Don Mariano Pacheco, Owen Smith, Finca Helvetia, and L. L. Pettersen etc. Don Mariano has already received his seeds.

The Individual Tree Records of the 75 trees sampled, photographs and supplementary notes will be sent up to you when prepared.

On the whole, I had very good luck in Costa Rica, thanks for the most part to the letters of Introduction given me by Dr. Popenoe. Also the Costa Ricans are very democratic, understanding first-rate people. Not to mention the fact that the forests where the wild Cinchona are to be found are magnificent (as will be pointed out in my notes).

With best regards,

Very truly yours,

F. Rosengarten Jr.

January 1, 1942.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of yours of December 2, 4,
and 22, 1941.

I will see Sanchez as soon as possible to work out the option arrangement of \$ 100 - \$ 150 over Maxbal. Then Hoehn and I will go see Gantenbein at Huehuetenango in about 3 weeks. The arrangement you mention would seem to be most satisfactory to both sides.

Everything seems to be getting along in satisfactory fashion at Naranjo. Dr. Popence has just paid us a visit in which he did some very worth-while work with Benitez in the field re. grafting.

Dr. Mueller, who accompanied Dr. Popence on this visit, has borrowed the equipment from the Naranjo laboratory noted on the enclosed sheet. He will then use this equipment at Chimaltenango to study diseased leaves etc. from Naranjo.

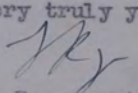
I have just sent off by Air Express (yesterday) 75 bark samples, Rosengarten 1 to Rosengarten 75 incl. The bark is from the wild Cinchona of Costa Rica. As soon as you can send me the results of these, I will pass them along to several interested parties including the Government Officials of Costa Rica who were so helpful to me.

Seed was gathered from the following Rosengarten numbers and has been sown at El Naranjo: 21, 22, 23, 26, 34, 35, 38, 44, 45, 46, 47, 49, 50, 54, 55, 58, 59, 60, 61, 62, 63, 64, 65, 67, 69, 70, 71, 73, 75. (Total: seed from 29 trees.)

Don Oton Jimenez of San Jose, Costa Rica, a pharmacist interested in plants, and a good friend of Dr. Popence, has offered his services to Merck & Co., in case they wish to make collection of Medicinal Plants in Costa Rica. Perhaps Dr. Krakoff would be interested in this information.

With best regards, and a very Happy New Year to you and your family from my wife and myself,

Very truly yours,


F. Rosengarten Jr.

P. S. Cuttings of the Sugar Cane varieties brought by Pennock in 1940 from Puerto Rico have been distributed to the following: Mariano Pacheco, Owen Smith, Bellamy, and Manuel Herrera.

The varieties are M-275 and M-28. 8 cuttings of M-275 were distributed to each of the above; one cutting of M-28 was also given to the Institute for Botanical Documentation, Bellamy. (M. means Mayaguez.)

Finca El Naranjo,
June 24, 1942.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of yours of June 8, (2), and June 12, (2), together with enclosures. All of these letters arrived yesterday.

Re. your letter (1) of June 8:

(1) Jorge Benitez is in much better shape than he was 3 or 4 months ago.

(2) Re. status of purchasing properties.

a. Maxbal. We have paid \$150 option on purchase of Maxbal, good until Feb. 1, 1943. (i. e. \$1,350 still to pay.) As confirmed in your letter of May 20, 1942, we plan to purchase Maxbal soon after Heohn's return from that property in mid-July, provided his report is highly favorable. Our reasons for purchasing at that time are stated in my report to you of May 11, 1942.

b. Naranjito. This property, officially known as San Pablito has been purchased for \$1,750, as noted in my letter to you of June 16, 1942.

c. Costa Rica. The status of the Costa Rica property is explained to you in my letter to you of June 19, 1942.

The Calisaya I saw at Porvenir is undoubtedly of origin long previous to Franke's time in Guatemala.

Re. your letter (2) of June 8, 1942: I have heard of Sr. Patino and the Mexican finca Guatimol, and according to these reports they have at Guatimol quite a lot of *Succirubra* in the early stages of development. This is hearsay, however, not fact.

Sr. Patino visited Mr. Pettersen at Zapote several months ago; after his talks with Sr. Patino, I have reason to believe Mr. Pettersen is enthusiastic about the possibilities of extraction of Cinchona alkaloids from low grade Cinchona barks, which extraction might be carried out at Zapote. I have suggested to Mr. Pettersen that he seek your advice before actually embarking on this plan.

Further experiments with "cuttings" will be carried out next month at Naranjo on the Cinchona.

I am passing along the information re. the assays of the Costa Rica Cinchona to the approved officials of the Costa Rican Government at this time; enclosed copies of letters to these officials are self-explanatory.

I have just received your cable of June 23, 1942. "If it can possibly be arranged without detriment to Cinchona in Guatemala would like to have you accompany Krukoff and Pili." As I intend to talk to you over the phone about this next week, I will not go into details here. I appreciate your opinion in this matter, and will do my best to work out the most satisfactory solution under the circumstances. As there is such a delay in the mails at present, a brief conversation by phone seems to be the most satisfactory medium for us to use, now and again, to facilitate complete understanding between us.

We are suspending temporarily our efforts to buy Cinchona bark in Guatemala, pending further instructions from you; i. e. until you advise us Merck & Co. has been appointed an agent of the Defense Supplies Corp. (see your letter of June 4, 1942.) Until we receive further advice from you about this, and possible changes in the price schedule, we cannot proceed further in Guatemala at this time without risking probable complications and ill-will later on from those with whom we might deal in Guatemala.

As we all agree, when the bark-purchasing situation is clarified, it would be worthwhile to deal with Finca Porvenir, if possible.

With best regards,

Very truly yours,

F. R.
F. Rosenzarten Jr.

c. c. Dr. Popence. ✓

EXPERIMENTAL PLANTATIONS INC.

FINCA EL NARANJO

CHICACAO, SUCH.

OFICINA GUATEMALA
10 CALLE ORIENTE, N° 7

July 1, 1942.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I am sending you off at this time by Air Express (1) a botanical specimen of the "Chalchupa" or "Rauwolfia heterophylla" used as an anti-malarial and anti-snake bite remedy on the Guatemalan west coast. (2) about 5 kilos of material of "Chalchupa".

Another 5 kilos or so of "Chalchupa" will be sent to you by regular mail. This material was collected thanks to Mr. Bellamy of El Salto.

~~Apot~~ from the "Chacchupa", a sample of "paraiso" is being sent to you by regular mail at this time. Dr. Steyermark identified this "paraiso" as Melia azedarach L. "Paraiso" is used by the Indians on the west coast of Guatemala as a repellent to insects.

Succirubra seed. About 400 grams of Succirubra seed has been given to Carlos Herrera & Cia., for cultivation at fincas Baul and Diamantes. Another 300 grams has been given to Grace & Co., for cultivation at the finca "California" near Pochuta. As Mr. Alberto Bianchi of Grace & Co., who used to handle the Cinchona at Moca, will be taking care of these latter seeds, quite a bit of Succirubra should result.

Mr. L. L. Pettersen has just returned to Guatemala from the States. As an informal exchange, we are going to get 500 grafts of the Rey hybrid tree at Zapote, for a quantity of Succirubra seed which Mr. Pettersen is interested in cultivating on a large scale at his finca "Trapiche Grande."

At your request I am enclosing some sheets of Experimental Plantations Inc. stationery.

With best regards,

Sincerely yours,

F. R.
F. Rosengarten Jr.

P. S. Following our phone conversation of yesterday, I have made a tentative reservation to leave Guatemala City for Bogota, Colombia, on August 5, 1942/. The Pan American Airways employee has told me I should have some sort of "priority", or this passage will be difficult to keep.

c.c. D. Popenoe ✓

Finca El Naranjo,
July 4, 1942.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of yours of May 6, (together with Ficin enclosures), June 16 and June 22.

(1) Re. the Physlostignine (Calibar) seeds. These were planted on February 18, 1942 and have not yet germinated.

I will pass along to Mr. Bellamy his copy of the ficin correspondence.

(2) Re. your letter of June 16. I am very sorry to hear of Col. Ruehl's death. We all appreciate his contributions to Cinchona in this hemisphere.

You will recall that when I was in the states in April, I sent you copies of certain letters from Col. Ruehl's files which I thought might be of interest to you. Unfortunately my notes on these files are not a formal resumé; I enclose, however, some notes I made re. Colombia from these files, in case these may be of interest. I will give Dr. Krukoff a copy of these notes when I see him in Guatemala.

(3) Re. your letter of June 22. I will be on the lookout for Mr. Birdsall in Guatemala on July 16, and in case I am on the plantation, will leave a suggested itinerary and instructions as to how to get to Naranjo for him at the Palace Hotel.

I submit herewith a proposal that I would appreciate your opinion about, at your earliest convenience, for I think it demands our immediate attention. Namely that we try to buy (if we can buy it reasonably and with the approval of the American Diplomatic Authorities) the upper portion of the finca Castaños (i. e. 3,800 ft. to 7,150 ft.) As noted in my letter to you of August 12, 1941, there are in Castaños between 3,800 ft. and 5200 ft., 3 caballerías of abandoned cafetal. Between 5,200 ft. and 7,150 ft. (the upper limit of the property) there are 3 1/2 caballerías of virgin land which Hoehn thinks highly of. We might be able to buy this upper part of Castaños from Nottebohm, without the lower part below 3,800 ft. which includes the cafetal now in use.

If you approve, I will look into this at once. This upper portion of Castaños would make a fine addition to Naranjo as it would give us a large block of additional nursery space (for grafting) and would also provide us with land for possible large scale *Succirubra* field plantings at 5' by 5', for 1944.

Such a purchase, if it could be effected reasonably, would strengthen our position in Guatemala considerably.

If it is worthwhile to plant Succirubra directly in the field at 5' by 5', as we have been planting Krukoffs, we should undoubtedly be doing something about it. That is to say, Succirubra seed of our present supply that might give 2 1/2 % Q.S., and 9% Total Alkaloids, that might give bark for either Quinine Sulfate or Totaquina. We have so much choice Succirubra seed on hand now at Naranjo, and the cultivation of Succirubra is so relatively easy and inexpensive, it would seem a pity not to push ahead now in this type of cultivation. If you think it worthwhile, we could during 1944 plant out about 500,000 Succirubra at 5' by 5', if not in Castaños in some other property we might acquire for such a purpose. Perhaps in 1950 we would be very glad we had taken such a step in 1942, or very sorry if we hadn't. It seems to me it is our responsibility in Guatemala, as leaders of the Cinchona project, to take the initiative in this Succirubra planting, especially if we and the U. S. Government would like others to do the same. (Which I assume is the case, for the sake of Cinchona conservation and development).

Such a Succirubra field planting program would supplement and in no way interfere with our regular Krukoff and Grafting programs, handling of ledgeriana etc.

Will you please give me your opinion (1) about the need for pushing ahead with Succirubra Field plantings in Guatemala, at say 5' by 5'; and (2) whether or not you wish me to look into the Castaños situation noted above, or, failing this, look around for some other appropriate site for Succirubra Field Planting (apart from the problematical scheme of harvesting 2 year old Succirubra planted at 10" by 10".)

All experience to date in Guatemala seems to indicate that planting Succirubra out in the field is like shooting fish in a barrel, and Experimental Plantations Inc. could establish large Succirubra Field Plantings for relatively small expense, using the present staff at our disposal in Guatemala.

Succirubra seed sown in August-October 1942, could be planted in nursery position (without irrigation) in May-June 1943, and then planted in field position in May-June 1944.

I enclose our 1942 field planting summary to date.

Very truly yours,

F. Rosengarten Jr.

c. c. Dr. Popenoe. ✓

EXPERIMENTAL PLANTATIONS INC.

FINCA EL NARANJO

CHICACAO, SUCH.

OFICINA GUATEMALA
10 CALLE ORIENTE, N° 7

July 19, 1942.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of yours of July 1, together with enclosures. The enclosed copy (1) of a letter of mine to Mr. Gibson is self-explanatory. Re. Mr. Lamport, if it is not too much trouble, would you personally mind writing him a letter explaining the difficulties that have confronted you in the States. Mr. Lamport is by far the most promising contact we have in Guatemala for collecting Cinchona bark, but he is a little bit hurt in that he has received no direct answers to the letters he has written to Rahway. The change in prices of Cinchona bark as arranged by the Defense Supplies Corp. have not encouraged Mr. Lamport very much either. That is why I ask you to write to him, as we want to encourage him to keep working for us on the bark collection.

Re. Succirubra Planting: by now you should have received my report of July 11 entitled "Succirubra Cultivation in Guatemala." I believe this is the soundest Planting Program Experimental Plantations Inc. could possibly undertake at this time, and I hope it will be given due consideration.

We also have in mind, however, the 10" by 10" Succirubra Planting scheme. Hoehn should be back from Maxbal in a day or two, and I will let you know at once how the 10" by 10" Succirubra Planting scheme is progressing there. Re. activity in this same scheme on the west coast (Chicacao) region, our first important step is to sow plenty of Succirubra seed from June-November 1942. Seedlings grown from these seeds can then be planted in experimental plots of 2 acres each at 10" by 10" at Trapiche Grande (900 ft.), Panama (2,000 ft.) and Moca or Helvetia (3,000 ft.) in May, June 1943 to supplement the 10" by 10" Succirubra Planting at Maxbal. Allowing roughly 50,000 to the acre, that will be 100,000 Succirubra at 10" by 10" in each of these 3 altitudes, to be planted out in May, June 1943. This is our present tentative schedule for Succirubra Planting at 10" by 10" in Guatemala.

Enclosed please find a self-explanatory letter (2) to Dr. Birdsall, which actually never worked out as Dr. Birdsall arrived in Guatemala on July 17 instead of July 15, and gave me no advice of his change in itinerary. It's too bad Dr. Birdsall didn't plan to stay 2 or 3 weeks instead of 2 or 3 days in Guatemala, if he really wants to study the Cinchona. As you know, about all you can do in Guatemala in 2 or 3 days is travel. I arranged for him to go directly to Naranjo yesterday

EXPERIMENTAL PLANTATIONS INC.

FINCA EL NARANJO

CHICACAO, SUCH.

OFICINA GUATEMALA
10 CALLE ORIENTE, N° 7

morning in a Clark car; also, I gave him several letters of introduction.

Enclosed please find (3) copies of correspondence with Mr. L. L. Pettersen. The story here is this: Mr. Pettersen gave to me as a personal gift 500 desirable "Rey" grafts, grafted in '41 at Monte Rey, Zapote; these of course I gladly donate to Finca El Naranjo, where they will be planted below "Lojita". At the same time, Mr. Pettersen indicated he wanted about 35 lbs. of Succirubra seed for cultivation, as an emergency measure. Much of this cultivation of his will probably be carried out at "Trapiche Grande", (altitude 800 ft.) As he points out to me in his letter of July 8, 1942, planting this seed as an emergency measure in either "Trapiche Grande" or "Zapote" would be a risky business proposition for him, so he could only receive these seeds from us with no strings attached; otherwise he would have to obtain this quantity of Succirubra seed elsewhere. Consequently, I gave him the 35 lbs. of Succirubra seed he wanted from our large supply at Naranjo, telling him these were a personal gift from me, with no strings attached. This I did (1) to make sure there would be no hitch when Benitez went to Zapote for the 500 "Rey" grafts, and (2) As Mr. Pettersen's point about the business risk involved in his Succirubra planting scheme, particularly at "Trapiche Grande" is valid. Also (3), we want to keep on the best terms with Mr. Pettersen as an important Cinchona cooperator.

I put through this deal confident of your approval. The situation was one that required immediate action, and any delay might have worked against our interests, i. e. in obtaining these 500 "Rey" grafts for Naranjo during this rainy season. These 500 "Rey" grafts should frankly be of tremendous value to us at Naranjo as a source of choice grafting material in 1943 and the future. The mother "Rey" tree at Monte Rey, Zapote, is the finest (7.5% Q. S.) old hybrid tree we have yet come across in Guatemala, and up to last week we had not even one graft of the original "Rey" clone at El Naranjo.

Also Mr. Pettersen is putting to use the 35 lbs. of seed which were lying idle at El Naranjo, for the good of the United Nations in this emergency, and we certainly don't want to stand in his way in this.

Persuant to our telephone conversation of yesterday, I have given up my plane reservation to Colombia on August 6. I plan to meet Dr. Krukoff and Mr. Pilli in Guatemala this afternoon.

Very truly yours,

F. Rosengarten Jr.

c. c. Dr. Popence.✓
Dr. Krukoff.

Finca El Naranjo,
December 18, 1942.

Mr. R. P. Lukens,
Merck & Co., Inc.,
Rahway, N. J.

Dear Mr. Lukens:

I acknowledge receipt of yours of November 27, December 4 and December 7, 1942.

Re. paragraph # 1, of your letter of November 27, I apologize if I have been over-emphatic about this matter, but I assure you whatever over-emphasis that existed on my part was presented for what I considered to be the good of the Merck Tropical Organization.

I am having the 1943 Budget for Experimental Plantations Inc. in Guatemala and Costa Rica typed up at this time, and will send it to you as soon as possible.

Mr. Pinkus has telegraphed me from Mexico, and I plan to meet him in Guatemala on December 21.

Many thanks for your approval of the increase in Hoehn's salary to \$200. per month, and also the Christmas present of \$100. each for Hoehn and Benitez.

I will pass along the information re. the camera and assays to Dr. Shuman.

Sorry not to be able to give you any definite advice about the activities of the American Quinine Co. in Guatemala.

I will be better prepared to give you information re. labor rates and work accomplished in Costa Rica vs. labor rates and work accomplished in Guatemala after we have had a few more months experience in the former country.

We do not know yet exactly where the Pan American Highway will pass in Costa Rica.

I will not be able to submit a rough plan of the house for "Los Ensayos", Costa Rica, until I see Benitez in January. We will probably have the house built by a reliable contractor for a fixed amount.

No contract will be signed with Mr. Alberto Bianchi until you have approved the wording of it.

The end of next month we are removing our \$20. per month employee, Ricardo Medina, from Los Andes, Panamá, and placing a humbler boy there whose sole duty will be to take care of, irrigate etc., the remaining grafts and seedlings in our beds. By that time we will have completed our grafting at Los Andes with existing Succirubra root stock. Owen Smith fully approves of our placing another boy at lower pay at Los Andes.

I appreciate and agree 100% with the stand the Company has taken in Washington re. the Defense Supplies contract.

To date, I have received no notice from Mr. Macaulay about approval for us to collect seed at El Porvenir, but I plan to look him up during my next visit to Guatemala.

Enclosed please find notes of the last Cinchona Meeting held at Moca, which are self-explanatory; also copies of self-explanatory correspondence with Mr. Pettersen.

In the analyses dated November 3, 1942, the following are to be found:

Sample No.	mm. Thick.	% Qui. Sulfate	% Cde. Sulfate	% Other Alkaloids
Root bark	0.2	(3.7 Qui. & Cde. Sulfate)		4.0 (1.5 Cinchonine) (2.5 Amor. Alks.)
Branch bark	0.2	(No tartrate obtained)		
Stem bark	0.3	(2.2% Qui. & Cde. Sulfate)		

These analyses refer to 20, 2 1/2 yr. Succirubra from Finca El Naranjo. The assays appear to be unusually high; would it be possible to check them? We would be interested in hearing down here what your present opinion is about the feasibility of extraction of total alkaloids from the 2 1/2 year old Succirubra stock.

During the past few days I have inspected the Cinchona at Naranjito and El Naranjo with Hoehn, and herewith submit progress report:

Naranjito (altitude 2400 ft.) At present, under shade of the bananal are 52,000 Succirubra at 4" by 4"; under shade of the cafetal 89,000 Succirubra at 4" by 4"; and in seedbeds, 102,000 Succirubra at 2" by 2". On the whole, the appearance of these plants is excellent.

The ledgeriana grafts planted for experimental purposes at Naranjito are the healthiest and handsomest grafts of their age that I have seen growing anywhere in Guatemala.

Conclusion: To date, 2,400 ft. in the Chicacao zone looks extremely promising for Cinchona.

At El Naranjo the progress of the work is encouraging, and Hoehn is to be praised for the work he has accomplished in Benitez' absence.

Of the trial 1941 plantings of Krukoff, all plantings have improved considerably in the past 6 months, especially Chimborazito, (altitude 6,000 ft.)

At Lojita (5,000 ft.) and Huasibambita (4,000 ft.), the Krukoffs have made notable growth. At Aconcagua (7,000 ft.) the Krukoffs have not grown as much, but are improved in appearance for the most part.

At Chimborazo (6,000 ft.) the ledger seedlings are doing poorly but the ledger grafts and African Succirubra are doing well. It is of particular interest to note the health, vigor and growth of these Succirubra at 6,000 ft. at El Naranjo.

At Loja (5,000 ft.) and Huasibamba (3,800 ft.) the ledger grafts on the whole are making satisfactory growth, but a few have died and are dying of a disease which we have noted in the past and which Benitez has referred to as "canker"; speaking of disease, it is interesting to note that the same plants which a few months ago were suffering from "red leaf spotting" (Krukoff Calisaya) have now recovered and are making excellent growth, in Huasibambita.

A most encouraging change has taken place in the Pump Nursery, where we have 204,000 krukoffs at 6" by 8". These Krukoffs have improved tremendously in the past few months, and now for the most part, are in excellent condition, showing vigorous growth.

The 1942 field plantings of Krukoffs are doing considerably better in December 1942 than the 1941 field plantings did in December 1941. The general appearance of the 145,000 Krukoffs in field position on the Loma Grande is very good.

I have waited for some time to present to you a modified plan for Merck's large scale Succirubra program in Guatemala, as I was unable to submit anything definite not knowing how we would be involved in a Government Program at El Porvenir etc. As it now appears the plans for the Government Program have come to an impasse, I should like to submit the following Succirubra Program for Merck. To simplify the background for the program, I will first submit proposed plans for 1943's Field Plantings at El Naranjo.

For our 1943 Field Planting Program at El Naranjo, we should have available for planting to the field approximately 275,000 Krukoffs, 10,000 grafts and 12,000 Ledgeriana seedlings.

We plan to handle this field planting program as follows, during 1943's rainy season: the 275,000 Krukoffs will be planted in this manner; 32,000 on the Loma Chimborazo between Chimborazo and Loja; 13,500 in the montaña near seed garden # 1; the remainder in the cafetal area that lies between the camino real to Santa Lucía, the Loma Grande and the boundary of Baja Vista.

The 10,000 grafts will be planted in the cafetal near the camino real to Santa Lucía, between Huasibambita and the Almacigo Esterlina.

The huskiest 12,000 ledger seedlings we plan to plant on the loma near the Castaños boundary plus the small lomita to the left of the Pump Nursery as one ascends.

After carrying out 1943's field planting program, we will have left at El Naranjo for 1944 and the future only about 1/2 caballeria of choice land, which should be reserved for field plantings of high-yielding grafts, Dr. Shuman's plants etc. It is in a sense to be regretted perhaps that we will have used up so much available land at El Naranjo by the end of 1943's field planting, but at the same time with so many large desirable plants in Nursery position that have to be transplanted to the field, I think we should be glad we are making progress at El Naranjo; as after all it is the trees in field position that produce Cinchona bark which is our reason for being here. Personally I am glad we are getting beyond the stage of a lot of plants in the seedbeds and nurseries and practically none in the field.

You will note that in the above program I have made no mention of Succirubra. The modified Merck Succirubra Program for El Naranjo that I am submitting for your approval is modified, very modified, in comparison to the scheme of last July.

I propose we plant Succirubra at El Naranjo at 5' by 5' in the entire strip of the finca between 6000 and 6300 ft.; also, in other locations at El Naranjo at lower altitudes, which through steepness or other undesirable factors would not be suitable for Calisayas or grafts. The strip between 6000 and 6300 ft., in light of our present knowledge, appears to be a bit too high for Calisayas or grafts, but would be quite suitable for Succirubra, as we note from the vigor of the Succirubra at Chimborazo (6000 ft.).

We estimate that there are available at El Naranjo between 6000 and 6300 ft. about 80 acres; also, we estimate there are available at lower altitudes at El Naranjo in areas suitable only for Succirubra about 55 acres.

In this total area of 135 acres at El Naranjo proposed for Succirubra, we could plant 202,000 Succirubra at 5' by 5'. The total estimated cost of this planting at El Naranjo including opening up areas, cleaning, staking, transplanting, and care during the first four years until the Succirubra would need no more attention is \$ 4,981. (We already have in nursery position at Naranjo and Naranjito sufficient choice Succirubra from San Pablo and Paris seed to take care of this proposed planting.)

I believe this plan would be a sound insurance policy for El Naranjo, and because of the relatively small expense involved, I urge it be carried out by Merck with no governmental assistance.

We could probably plant out about 150,000 Succirubra at 5' by 5' at El Naranjo in 1943's rainy season, and the remainder in 1944.

Hoehn and I have both been over this plan carefully, and both back it 100%. I would appreciate a cable from you approving it, so Hoehn can arrange to get more laborers at once to commence preparation of the areas for Succirubra in addition to our other plantation work which of course will proceed and will in no way be hindered by this modified Succirubra Program for El Naranjo.

We must face the fact that after 1943's field planting, we will probably have available for 1944 and the future ^{only} about 60 acres of choice land for field planting at El Naranjo.

This is a very important problem. Dr. Shuman's breeding work and Mr. Pinkus' propagation work are important, but it is obvious we must have land upon which to plant the hybrids produced by Dr. Shuman and the grafts produced by Mr. Pinkus.

This brings up an important point, and that is the desirability of you, Dr. Popenoe, Dr. Krukoff and myself meeting in Guatemala in February 1943 to discuss our problems on the ground and plan definite action.

I believe we should expand in the Maxbal region. For the \$ 60,000. it would cost us to buy Castanos or a similar finca near Naranjo, we could do the following at Maxbal, where Cinchona climatic conditions are apparently far more favorable: (1) Buy 10,000 acres near Maxbal for \$ 10,000. (2) Build comfortable houses for Hoehn and Pinkus for \$ 5,000. (3) Spend \$ 5,000. on improving the road to Maxbal; Total \$ 20,000. We would then have spent \$ 40,000 less than we would have spent for let us say Castanos, have ten times as much land more suitable for Cinchona, and not be the slightest bit cramped for space to expand in a region where we believe Ledgeriana will thrive on its own roots.

After 1944 we would then concentrate in the Maxbal region on (1) Large scale planting of C. ledgeriana on its own roots, (2) Grafting of Ledgeriana clones under supervision of Mr. Pinkus, (3) Planting of seeds produced by Dr. Shuman at El Naranjo etc. (4) Possibly a modified Succirubra Program at 5' by 5' with carefully selected seed. (5) Experimental work on "cuttings" by Mr. Pinkus. The Maxbal land as we know is virgin, not used coffee land, so growth of our plantations should be far more satisfactory than in the Naranjo zone. Also as there are no large scale coffee plantings in the Maxbal region, there would be no danger of coffee diseases affecting the Cinchona, as Dr. Shuman points out, since it would not be possible for the Cinchona to contract diseases from neighboring coffee plants.

I am presenting this Maxbal program for consideration and hope it will be approved by February.

I am requesting immediate approval, however, of the modified Succirubra Program for El Naranjo presented on page 4 of this letter. As it will probably involve only some \$ 4,981. and relatively accomplish so much, I respectfully await an early and favorable reply by cable from you to the effect this modified Succirubra Program for El Naranjo has been approved, by and for Merck & Co.

I am presenting no definite Modified Succirubra Program for Costa Rica at this time, as it seems best to wait until January 1943 when I will have observed actual progress in Costa Rica.

I suggest we wait until you come down in February to discuss in detail the question of the \$ 1,000. appropriation authorized by the Gov't. By that time the picture should be clearer and you yourself can go over with me in the field the question of the lf's and how's of this whole program, if such a program actually exists.

c. c. Dr. Krukoff,
Dr. Popenoe.

With best regards, Very truly yours,
F. Rosengarten Jr.