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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.



Nº .....

UNIVERSIDAD DE GUAYAQUIL

INSTITUTO BOTANICO  
Anexo a la Facultad de Ciencias  
Químicas y Naturales  
Casilla 2.497  
3989

Guayaquil, 17 de Febrero..... de 1956

Mr. Paul Alen  
Botanist-in-charge-when-wounded?  
Lancetilla Experiment Station  
Research Dept., United Fruit Co.  
Tela, Honduras

Dear Paul,

Long time no nada. Managed to get your adress from Bob Dressler figuring that it was about time that I thanked you for your kind hospitality in San Salvador.

Time goes by and wonder of wonders, I made the grade and got my degree. I dont feel a bit wizer however. I'm now functioning as director of the above organization and I think that we've got a good thing going. Am gradually ironing out the problems involved in the "latin" system and except for shortage of money we are rolling right along. Managed to drag 17 out of some twenty five first year students through and there are about 5 who show promise of doing something. Got Frymire fixed up with the position of professor of Zoology here so we have a fair covering of Natural History. We also have some five national professors but they are unfortunately very poorly trained.

Frymire and I have been sort of taking up where you left off on your pollination studies and we've found some interesting things. First, we have found the genus *Eulaema* (*Centris*) to be extremely important in several of the large flowered orchids here in the *Catasetineae* and *Stanhopeineae*. We have found *Catasetum macroglossum* to be worked by three species of *Eulaema*, *E. fasciata*, *E. musitans* and *E. sp* (as yet not identified). *E. fasciata* and *E. musitans* also pollinate *Sobralia violacea*. *Sobralia violacea* is also pollinated by a medium sized black carpenter bee and a brown one. *E. sp* pollinates *Stanhopea oculata* (*insignis*) (inside parenthesis my personal opinion) also. *Stanhopea tricornis* is pollinated by *E. dimidiata*. Thereby the two principle *Stanhopeas* of Ecuador seem to be effectively isolated genetically, by manner of their pollinators. The two *Stanhopeas* are sympatric in distribution. *Epidendrum difforme* is pollinated by a night flying *Arctiideae* (moth). That's what we've seen so far. We have also watched *Oncidium*s and *Epidendrum*s, *Lycastes* and *Cattleya* as well as several other things and have found nothing. And I really mean nothing. We caught a suspected pollinator of *Oncidium hyphaematicum* which appears to be a brownish *Euglossa* (or

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if possible

some genus near by) which kept hanging around the flowers and driving other insects away who came near. If insects can crack the sound barrier that one could and it was only with a combination of stealth and downright treachery that we ever captured him but he didn't have a single pollinia on him. Even though 12 out of fifteen flowers on the spike had been pollinated within a matter of hours (two or three at most). The pollinã (complete with stipe) were sitting on the stigmatic surface and the pollinã from the flowers were gone.

All of the *Eulaema* seem to be attracted by the odor of the flowers involved and we can find no evidence that either eat or drink nectar from any of the flowers. Also out of some 15 observations of *Catasetums*, *Stanhopeas* and *Sobralias* being pollinated (probably some 100 bees involved) all except one was male and the female was *E. musitans* which came back to the nest with *Sobralia* pollenia on her back. Seems to indicate that only the males are much interested in orchids. We watched a colony of female *E. musitans* for several days and never saw a single male come near. Looks like they take off after metamorphosis and live the life of Riley for their existence.

Now, a couple of questions. From your articles it appears as though you have found *Euglossa cordata* to be ~~impro~~ the pollinators of *Congora*, *Mormodes* and *Corianthes*. So far we have not had any of these genera available for watching but expect more or less the same thing since were loaded with *Euglossa* here. Also you have *Eulaema fasciata* working *Cynoches* and *Catasetum* in Central America. This certainly concurs with our findings here on *Catasetum* and I suspect the same on *Cynoches lehmani* since it occurs in abundance along with *Catasetums*. Have you any ideas on pollinators for other genera or even other species within the genera we have discussed? Particularly, other pollinators from which we have found. Also have you seen anything among other groups of orchids like the small flowered terrestrials or pleurthallids?

Bob tells me that you have been making trips to the orient collecting Bananas. How do you get these gravey jobs? If you ever get down this way and don't stop in for a chat or even for a prolonged visit if you can we'll feel insulted. All for now.

Give Dorothy our regards.

Sincerely,

Bob Dobson  
& Professor Freyweyer

Mr. Paul Allen  
Centro Nacional de Agronomia  
Santa Tecla, El Salvador

2 Oct 58

Dear Mr. Allen,

Thanks for your excellent letter. I will sort of outline our plans as they are crystalizing at the moment. We will leave Cuenca on the sixth of October for Guayaquil. From Guayaquil to Panama on the 9th and I suspect that we will be in Panama for three days at least. From there we will fly to San Jose, C. R. and will probably be there for four days. I have records of O. titania in the Province of San Jose at 'El General'. Then we will fly to San Salvador to see you. We would not plan to be in El Salvador more than two days. Just sufficient time to have a long talk with you before heading on to Honduras. Probably plan to be in Honduras for a week or so and then spend a week or so in Guatemala and pull out for the States.

With the knowledge that you have of Central American orchids, I feel that it would be a mistake for me to not drop in for a talk before moving on and I am sure that you can help me by giving advice as to where in Honduras and Guatemala we should go to look for these Oncidiums.

As far as a place to stay, I'm sure that the boarding house would be excellent or we can stay in a hotel for the short time that we will be there. Erymire and I are accustomed to rather rough going. He was a Captain in the Infantry during the Korean rat screw and I was a paratrooper. We tend to get by under most circumstances.

Now, on with our discussion of these Oncidiums. From what I have seen of O. pusillum from Central America I would tend to think that it is essentially the same as the form from the coastal areas of Ecuador. These tend to be much smaller in plant and flower than the form from the Eastern slopes of the Andes as well as somewhat different in shape of flower, color and shape of callus. Sufficiently different, I would say, for varietal or subspecific designation. I suspect that this might be where Schweinfurth's determination might have been a little off. I received a letter from Schwartz at Harvard a couple of months ago in which he said that they had no specimens whatsoever of O. punilie and he also noted that he thought that O. glossomystax is a synonym of O. titania. So perhaps he looked at those specimens from Columbia and decided that they were O. pusillum. I hope that they will see fit to loan me their specimens of this group when I get home. I would sort of like to get this group straightened out if only for my own satisfaction.

I agree with you wholeheartedly on the difficulties and problems involved in the duplication of names between Central and South America. I rather suspect, from what I have seen here, that there is a lot more of extension of ranges than has been previously thought. Unfortunately, and it is not difficult to understand what with the difficulties involved in communications here, the two areas have been considered as quite distinct. Well, all this can be saved for discussion later.

We will plan then, to send you a wire from Costa Rica informing you as to our arrival time in San Salvador. I don't know where Santa Tecla is located but if it is any distance from San Salvador, don't plan to meet us. We will find our way to you. I have taken the liberty of using your address for mail purposes and I hope that you won't mind.

Yours Sincerely,



CENTRO NACIONAL DE AGRONOMIA  
SANTA TECLA, EL SALVADOR

September 27, 1958

Mr. Calaway H. Dodson  
Casilla 122  
Cuenca, Ecuador

Dear Mr. Dodson:

There is a saying in Central America that "la experiencia entra por el cuero" which, broadly interpreted means that each of us tend to be conditioned and influenced by what we have seen for ourselves.

My impression from reading your letters and seeing your fine photographs is that you already know a good deal more about your subject than most of us, and that you will only need to evaluate your work in the light of additional findings in adjacent areas.

You may come to the conclusion, for example, that our Central American plants are not O. pusillum at all, since in my experience they seldom if ever exceed about two inches in height, and very frequently flower when much smaller. My personal reaction to the species collected in Colombian Amazonia was that it was pusillum, since it matched our Central American things almost exactly in size and general aspect, but found in time that the specimens were considered by Charles Schweinfurth to be pumilio. These are now at Cambridge, and I have no way of checking the matter further, pending a visit there.

It would seem to me that you are willy-nilly being forced into the thankless chore of trying to coordinate, at least in part, the names that have been used in Central and South America. Check lists for Colombia and Panama, for example, show the two countries as having only about half a dozen species in common, which is obvious nonsense, yet a great deal of careful work would have to be done on the comparison of type specimens, both in the U.S. and in Europe to straighten the thing out. Much could be done through the careful comparison of descriptions, so that suspected cases of identity could be kept to a minimum, but even that would take quite a bit of time.

I cannot, at the moment offer to show you either O. pusillum or O. titania in El Salvador (O. crista-galli is our best local substitute), but I should be very happy to see you if you find time to stop over on your way north. Our own accommodations here are limited to a rather tiny apartment, but we could lline up a room in a good boarding house where we have stayed ourselves, if you could give us a bit of definite notice as to your arrival date and flight number. It is only fair to warn you that Salvador is VERY expensive, as compared to Ecuador, but you may already be aware of that fact. In any event, we will be very happy to see you if you decide to come.

Most sincerely,

Paul H. Allen

*Correlations of*  
*O. tiania & S. Amer. populations*  
*Reproductive Habits Rate (except in sub. laccos)?*  
 (Have not seen *pusillum* in sub. -  
 CR's 7th. rather common  
 Finally in lower areas

Mr. Paul Allen  
 Centro Nacional de Agronomia  
 Santa Tecla, El Salvador

Sept 9, 1958

Dear Mr. Allen,

Thanks a lot for your highly informative letter. Our plans at the present are to leave Guayaquil for Panama on the 8th of Oct, stay in Panama for three or four days, travel on to Costa Rica and spend a few days there and then fly on to Honduras or El Salvador. I would very much appreciate an opportunity to discuss this problem with you, and a lot more things involving orchid material, and perhaps then travel on to do some serious looking for *O. tiania* and *O. glossomystax*. Consequently, if you feel that you would have a little time for talk we will certainly plan to drop by. Whether before or after searching Honduras will depend on several things. Anyway we should be in that area sometime around the 20th of Oct.

We have no definite time schedule as yet. The only thing important is that we be in the States by the Christmas holidays, or at least the family appears to think that this is important. I sort of feel that at the present time, working out this problem of the *O. pusillum* complex is most important and hope to accomplish this before hitting the states.

I don't  
 remember //

Now, if you will pardon my comments, I think that perhaps what you felt was *O. pumilio* might be a variant of *O. pusillum*. I say this because I can't imagine a plant of *O. pumilio* being anywhere near the size of *O. pusillum*. I'm enclosing a photo of a series of flowers taken at Zamorra in Southern Ecuador. This is also on the Amazon drainage. As you can see, the flowers are extremely different. First, on the upper left are two slightly different flowers of *O. pusillum*. Then there are four flowers taken at random from the hybrid population which exhibit color in the flower. At the lower left are three flowers which correspond more or less to *O. glossomystax* these were also taken from the hybrid population and as you can see vary considerably. On the lower right are four flowers of *O. pumilio*. These also vary slightly but in general are somewhat similar. The plant of *O. pusillum* is often up to five inches tall. The hybrids and *O. glossomystax* (as it appears in separate populations such as at Naranjapata in West-Central Ecuador) are about two inches tall and *O. pumilio* seems never to be more than one and a half inches tall and usually much smaller.

2" //  
 1" //

I compared these things with the plate in Martius - *Flora Brasiliica* and what I had thought to be *O. pumilio* and *O. glossomystax* appear to be correct and correspond to these figures very closely.

1/2" //

Therefore, I still believe that *O. pumilio* and *O. tiania* may be the same thing and *O. glossomystax* a hybrid. The figure of *O. tiania* in the Orchid Journal in your article corresponds exactly with what I feel is *O. pumilio* here as you can see from the enclosed pictures. Well, anyway I will bring some preserved material of each of these things and we can discuss this thing at length later.

From past experience with this group I suspect that they might be a little more common than at present thought, at least in this part of the world and perhaps in Central America also. It seems that if you don't actually put your hand on one of the blasted things you'll never see them. In one case, near Zaruma in West-Southern Ecuador, I found one plant in a guava

orchard and then proceeded to search that same small orchard for three days (it only consisted of 14 trees) finding one plant on the average for each hour of searching. If the first one hadn't of been so obvious I certainly would have said that they do not occur in that area and would have forgotten about it. As it was I found some thirty plants.

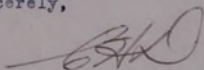
The strange thing is that at the guava orchard at Zamorra, about four acres in extent, there are probably two or three hundred thousand plants and I suspect that that is a conservative estimate. They literally cover the trees. Why?

Well, before I get carried away on this subject let me change it to other groups for a moment. We have found a tremendous amount of natural hybridization going on in Ecuador but generally occurring in the slopes of the Andes rather than on the coast or in the deep Oriente. I think that this is for good reason. More opportunity for divergence of species due to ecological separation has been offered here and then when the ecological barriers break down hybridization can occur to complicate the issue.

This hybridization seems to occur in nearly all groups where there is the possibility of compatible groups being brought together. I have found it in many groups of epiphytic orchids and in addition in terrestrials. I suppose that this sort of thing is what makes the whole group more interesting.

Well, we will hope to have an opportunity to talk to you on our way through and I will certainly appreciate any comments that you have to make on any of the above ramblings.

Sincerely,





C. H. Dodson  
Casilla 122  
Cuenca, Ecuador

Mr. Paul Allen  
Apartado 93  
Tegucigalpa, Honduras

21 Aug 58

Dear Mr. Allen,

I suspect that you have never heard of me and for that reason I will go into my background a little before I make my request. I'm working on a doctorate from the Rancho Santa Ana Botanic Garden in Claremont Calif in the field of Botany and specifically in genetics. I have been here for some ten months now studying natural hybridization occurring in wild populations of orchids for use as a thesis. Worked under Lee Lenz for some time and under Edgar Anderson for a while. Am using Anderson's statistical methods in studying the results of hybridization here in the Andes.

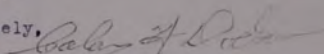
Enough of that. What I am interested in at the moment is a strange hybrid population in the Oncidium pusillum group occurring on the eastern slope of the Andes in Central and Southern Ecuador, and its implications. Seems that at about 1000 meters elevation all along the eastern slope, two species of this group come together, O. pusillum and O. pumilio. In this region O. pusillum is a shade lover and O. pumilio is a sun lover. Where cultivated guava orchards occur near rivers here, havoc reigns. Hybrids of every description imaginable between these two species occur. One of the predominate hybrid forms found here is precisely the same as O. glossomystax. There is every indication that this form is a result of hybridization between the aforementioned species and in this instance is simply a recombination among other recombinations. However, in other areas in Ecuador, O. glossomystax is found as a perfectly good and only slightly variable species.

Now the inference here is that O. glossomystax as a species is a result of hybridization between O. pusillum and in this area at least, O. pumilio. There is no longer much question about this at least in this area. The one problem, however, is that O. glossomystax apparently occurs in Central America and O. pumilio does not. But, another species, O. titania does occur there and as far as I can find, there is no difference between O. pumilio and O. titania.

What I am interested in then is to find O. titania and O. glossomystax in Central America and compare them with O. pumilio and O. glossomystax from this region. This is where you come in. With your extensive travel and experience with orchids in Central America I felt that perhaps you have run across either or both of these species and might be able to help me by directing me to the locality. After working with these things for nearly a year I am mighty aware of their elusiveness and the difficulties involved in finding them.

Our (my associate, G. B. Frymire and I) work will be finished here during the first days of October and we are planning to head back to the States by way of Central America, stopping wherever there is a possibility of running across either of these species. I would certainly appreciate any information about their localities that you could afford and if you feel that you might have a few free moments we would attempt to drop in for a bit of conversation on the way through.

Sincerely,

  
Calaway H Dodson