

OPUS Herbarium tour of South America, 18 October-7 December, 2015

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This account of my herbarium tour of South America covers the itinerary, gives an assessment of the respective quality of the herbaria visited based on their inventory of Araceae, introduces personnel involved with each institution, and discusses any particular difficulties in gaining access to the herbarium and other matters of interest to potential users. I made the entire trip based on my memory of where places were located and without access to any maps. A map is attached representing the route of the herbarium tour for the benefit of those not familiar with the geography of South America. This trip is historically important because it is probably the first time that any botanist made such an extensive review of South American herbaria. The trip was sponsored by an OPUS grant from the National Science Foundation, and a similar trip to herbaria of Central America took place during the summer of 2016.

In every herbarium I visited, I found new species of Araceae - in the case of the larger or more poorly

studied herbaria, many new species. I am hopeful that my visits and the determinations that I made will induce many of these Curators to consider making loans of these specimens. In a number of cases I think I convinced local herbarium staff members or students associated with the herbarium to consider working on Araceae, and I offered to give them assistance as well as the latest Lucid keys to assist them in their work. In other cases, where we might not be able to make loans available, I hope that the local assistants can prepare the descriptions needed to publish the new species. Several prospective researchers have expressed a strong desire to work with Araceae and some of them will be mentioned in this discourse.



My trip was rather hectic owing to the many stops and the need to spend so much time traveling. It required a great deal of stamina. I actually lost 25 pounds on the trip due to not eating regular meals and the many days spent without regular sleep. Often I would finish at one herbarium then go straight to the bus terminal, perhaps grabbing a few empanadas to eat on the way to the next place. Mostly I traveled at night, sleeping on the bus so that I could be in the next herbarium the following day. I visited 25 herbaria during the course of 49 days and traveled a total of 33,775 kilometers, with 13,464 kilometers of the total by bus or car. I took 7,138 images of herbarium specimens, and untold thousands of collections were newly determined. I had carried with me prepared annotation labels for the two largest genera, *Anthurium* and *Philodendron*, as well as labels for miscellaneous genera. These already had my name and date, so it meant less writing, but there was still so much writing for so many hours a day that my shoulder became inflamed at times.

My herbarium study expedition began in Colombia on **Sunday, 18 October, 2015**. I arrived in Bogotá and stayed with Elvia Mora, the mother of Marcela Mora.



Marcela Mora & Tom Croat

Marcela received her Ph.D. at the University of Alabama working with John Clark on Gesneriaceae but she is also a genuine expert on *Philodendron*. We have worked together for years on

Colombian Araceae.

I spent three days working in the herbaria in Bogotá, the first two full days **Monday, 19 October & Tuesday, 20 October** at the largest and best herbarium in Colombia, located at the **Universidad Nacional (COL)**, where Marcela did her undergraduate work. Elvia Mora was taking a class at the university so we rode there together each morning. At COL I selected a rather large loan, consisting of mostly *Anthurium* and *Philodendron*, and have arranged with the Curator Carlos Parra to send it with yet another loan, which he was about to send to MO. It will provide us with a lot more new

species to work on. The COL herbarium is now partly contained in compactors and the Araceae are located with the other monocots on the second floor of the entrance hall and above the Museo de Historia Natural.

On **Wednesday, 21 October** I went with Julio Betancur,



Carlos Parra



Julio Betancur

taxonomist at COL who works on Bromeliaceae, to the **Universidad de Los Andes (ANDES)**. That erbarium has a small but well curated set of Araceae. I was able to finish the determinations there by about lunch time so I went with the Curator Adolfo Jara

to lunch. The area around the Universidad de Los Andes is mostly closed to traffic, and there are lots of good small restaurants in the vicinity. At the restaurant we met up with Viviana Pinzón, Curator (as of that time – Viviana has since moved on) of the herbarium of the



Adolfo Jara

Universidad Distrital (UDBC) run by the city of Bogotá. It is located nearby and is also in the area of the old colonial city of Bogotá, but it is up in the hills overlooking the city. Though only a short distance away, it is all uphill so we went by taxi. The herbarium at the UDBC had a larger collection than the Universidad de los Andes, but I was still able to finish there by 6:00 PM. Viviana began the process of getting the necessary paperwork finished to send us the loan of the new species. As always, I asked about the possibility of borrowing those collections which appeared to be new but in any event I took detailed photos of all the unknown collections as well as those which would appear to be range records. I was able to upload many of these photos as I moved

from place to place, using FileZilla to move them onto the Missouri Botanical Garden's Cissus server.

Most hotel rooms had inadequate wifi but some herbaria, like the herbarium in Quibdó, had a cable with fast upload capacity. Frequently my email service was inadequate to even get on to email, or my time available was not long enough to send even one day's set of images. The first batch, sent from Elvia Mora's, took 3.5 hours, and I had to leave the computer running during the night while I slept. These pictures, with their associated label data, will be put into Tropicos by a team of Aroid volunteers. Nearly all specimens that I was unable to determine were photographed, as well as determined specimens but were thought to be range extensions or rare species, in order add to the label data in Tropicos or to have good images of rare species or type specimens. This admittedly means a lot of photographs will need to be studied and transposed, labeled, and entered into Tropicos.

On **Thursday, 22 October** at 7:00 AM, I took a bus to Tunja, the capital of Boyaca Department, located about two hours north of Bogotá. The taxi driver I used to get home the night before told me of a way to catch a bus on the Autopista Norte at Calle 170, so people can pick up a bus going north without going all the way to the Terminal Terrestre to get their bus. I made it to Tunja by about 9:00 AM. I took a taxi to the **University of Tunja Herbarium (UTPC)**, and was well received by María Eugenia Morales, the Curator, and all the staff. The collection in Tunja was



Maria Eugenia Morales (center, in sweater) and Staff

moderately small, only about $\frac{3}{4}$ of one column, but they had a lot of interesting and many new species. The collection is housed in a modern new herbarium building and is super cooled, separated from most working space by a massive sliding glass door in a floor-to-ceiling glass wall.

For each herbarium I visited I separated material that represented new species and encouraged the Curator

to try to send the separated material on loan. As an inducement I offered to pay for the shipment of the loan.

I had hoped to also include the **Instituto Alexander von Humbolt Herbario (FMB)** in my itinerary before going on to Bucaramanga but the Curator Humberto Mendoza was in the field. I had visited this herbarium, located in nearby Villa de Leiva, a colonial and tourism town east of Tunja, about five years earlier. Indeed, it was the first herbarium to make a loan to the Missouri Botanical Garden after a long hiatus when no loans from Colombia were possible. They have an excellent collection.



Humberto Mendoza

In Tunja some of the senior staff from UTPC took me to lunch in the town. After lunch I began going through project material, most of which was sterile transect vouchers. Around 5:00 PM I decided that if I did not take the bus on to my next stop in Bucaramanga early in the evening I would have to wait until midnight to get a bus that would arrive in the early morning hours the next day. I was too tired from lack of sleep from the night before in Bogotá to consider another sleepless night on the bus. Maria and another staff member took me to the bus terminal, and we arranged for the bus driver to put me off somewhere near hotels near the center of Bucaramanga. I arrived in Bucaramanga about 12:45 AM, and a nice taxi driver took me to the Hotel Patricia after getting specific instructions from the bus driver. Everyone was so nice to me throughout my trip, I was really pleased. My hotel room at the Hotel Patricia was on the 3rd floor and was really large with three beds. Bucaramanga is almost straight north of Tunja but at a much lower elevation, only 800 to 1000 m, and even though it is located in a deep valley there seemed to be no major river through the city.

The next morning **Friday, 23 October** I called Humberto García, Curator at the **Universidad Industrial de Bucaramanga (UIS)**. He came to get me at my hotel and then gave me a car tour of the campus of the University Industrial (initially an engineering school which later added other careers). I worked making determinations and taking pictures



Humberto García

all morning then Humberto took me to lunch at the University cafeteria with one of his students, Juan Diego Ramírez. Juan Diego is interested in orchids but I believe that I have gotten him interested in working on Araceae. One of my goals on this long trip was to find students who might be interested in the family Araceae, and to impress on them the benefits of working with Araceae. Juan Diego works part time at the CDBM. It is located on the outskirts of town in a suburb called Florida Blanca. We went there together after lunch and were taken on an extensive tour of the garden grounds. The botanical garden is located along a deep and steep rocky stream and has a significant number of interesting aroids from the local region. I took many of pictures of live plants but had to avoid making collections owing to the limited time. However one plant, a huge and beautiful Philodendron was of special interest since I think it is new. We collected enough of it to be able to make a good description and to allow us to key it out in Lucid. If it proves to be new, Juan Diego will make more collections of the plant. The species was abundant and was believed to have been collected locally. Later, in the herbarium of the botanical garden, I took some measurements and notes then later made a description of it. I finished the description of the plant at the hotel in Pamplona then pickled the ovaries for later study. The herbarium at the **Jardín Botánico Eloy Valenzuela (CDBM)** is a moderately small herbarium compared to UIS but still has many new and interesting collections, especially those associated with plants in cultivation at the Jardín Botánico Eloy Valenzuela. Alicia Rojas, the Director of the Herbarium and Curator of Living Plants, is a former student of Humberto García's at UIS.

On **Saturday, 24 October**, at the end of my first week in Colombia, I got up at 4:30 AM, took a taxi to the bus terminal, and then caught the 5:30 AM bus to

Pamplona. The road to the east toward Pamplona winds up the steep wall of the valley where Bucaramanga is situated. Bucaramanga is rather hot but we were soon so high that I was getting very cold. We stopped for breakfast at Berlín, a small town on the on the edge of the paramo at 3340 m, and I asked the driver to let me get more clothes out of my big bag. I put on both my hooded sweatshirt and my corduroy jacket so I was comfortable for the rest of the trip. Once we reached the margin of the paramo at about 3430 m we entered a broad stretch ranging between 2900 and 3400 m which was almost completely treeless and now largely devoted to the cultivation of potatoes and other cold growing crops like onions. When I first crossed that paramo 52 years earlier, it was beautiful and interesting with large stands of Lobelia and Espeletia all along the road to Cucuta. All of that typical paramo vegetation has since been removed.

We arrived at the edge of Pamplona, situated at about 2300 m, around 9:00 AM. The city, with a population of 52,000, was founded in 1549 in the Valley of the Río Espíritu Santo. The Universidad de Pamplona is located on the way into town and the bus driver let me off right at the gate. One of the security guards dragged my big bag to the herbarium where I met Roberto Sanchez, Curator of the **Herbarium at the University of Pamplona (CDBM)**. He had come in to the university on Saturday especially for me. The modest collection of Araceae there was very interesting and many of them were not immediately capable of being determined. Pamplona lies at such a



Roberto Sanchez, Tom Croat, Andrey Ojeda

high elevation that there are not a lot of Araceae in the immediate vicinity, but the university frequently collects in a couple of huge reserves in Norte de Santander. I spent the day working closely with a young man at the university, Andrey Ojeda, who is also interested in working with Araceae. He stayed

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with me all day while I was determining plants and I showed him how to use the Lucid keys to Anthurium and Philodendron, how to download the key, and gave him the keys and all my pictures. He is planning to write up a proposal to work on the Araceae in one of the parks in Norte de Santander for his Master's Degree.

After we finished determining plants, I took a taxi into town with Andrey and checked into the Cotranal Plaza Hotel which is within walking distance of the bus station. In the morning on **Sunday, 25 October** I dragged my bag to the bus station as soon as I woke up. I had planned to take a bus to Cucuta on the Venezuelan border, but it was Election Day and there were no buses. I figured if I got to Cucuta early enough I would be able to catch a bus north to Valledupar. Although I had previously been to Cucuta and had gone from there to Caracas, I had never gone to the north on the Colombia side. I had always wanted to see this stretch of Colombia along the Cordillera Oriental but was discouraged from going there owing to the political stability of the region where the FARC had established suzerainty. It is an area of high endemism and I expected the herbarium collections to reflect that.

I was able to get a taxi to take me to Cucuta which was surprisingly inexpensive with just four people in the car (\$5.00) but then ran into a road block. The road down from Pamplona (and I truly mean "down" because it was nearly a free-fall the whole way) was windy with dry forest vegetation. You could coast all the way, a distance of about 60 miles. Though the river gorge is deep, the stream is inconsequential. The road passes through only the small towns of Pamplonita and Durania. Cucuta is low and hot and currently very dry. Colombia has been experiencing a serious drought for about eight months. In fact, I did not once encounter rain while in Colombia except for a few sprinkles. The vegetation changed remarkably on the way down to Cucuta, becoming increasingly more arid. The city of 650,000, with an additional 200,000 in closely adjacent towns, is located on the border of Venezuela and is said to be the most commercially active border town in South America. Because Sunday was Election Day I was not able to get a bus or any form of transportation beyond Cucuta.

After realizing that I was stuck in Cucuta, I decided I might as well make the best of it, hole up somewhere, and work on my notes, manuscripts, and pictures. A guy with a two wheeled cart offered to take me to a hotel (he was probably getting kickbacks from the hotel because it was not the closest to the bus terminal). It was a small hotel near the terminal but proved to be a rather useless place, with no internet and nowhere to put the computer. At least the water did run, as did the electricity.

I went up onto the roof, three floors up, and found a chair, but there was no table anywhere in the hotel. I did find a small restaurant open and had some breakfast but they had no bread, only arepas, little patties made of corn meal that are common in Colombia. I decided to explore a bit more for stores but everything was closed.

I got up at 5:00 AM in the morning **Monday, 26 October** and bought a ticket to Valledupar, located on the northern edge of Cesar Department, whereas Cucuta is located in the eastern edge of Norte de Santander Department. I knew that it would be a long ride, but the bus was comfortable and with not many passengers. We left Cucuta at 7:00 AM and it took until midafternoon to get over the Cordillera Oriental, which provided very exciting scenery. En route we passed through Ocaña, which at 1190 m is the second largest city in the Norte de Santander department, until we topped out at a high point of 2450 m at La Curva. About 4:00 PM we had a long stop at Aguachica, a town of about 100,000 people in the southern part of the Department of Cesar at about 190 m. From there we had very nice, moderately flat highway until we reached Valledupar.

We did not reach Valledupar until nearly 9:00 PM so I missed whatever scenery there might have been in that last leg of the trip, but it was not likely to be much more than cow pastures from the looks of what I saw before it got dark and owing to the lack of significant changes in topography.

I took a taxi to a nearby hotel, and the next morning, **Tuesday, 27 October**, left at 6:00 AM to catch a bus to Ríoacha. We headed east out of Valledupar in the direction of some mountains but always seemed to skirt them. The road pretty much remained flat until we got very near Ríoacha. We passed through Río

Seco, Patillal, Curazao, San Juan del Cesar, Chorrera, Tomarrazón, and El Venticuato before arriving in Riohacha. Most of the towns were poor, small, dusty, and filled with sometimes substandard housing. I was amazed how many modestly large towns there were in a part of Colombia that is so arid and seemingly without a great deal of wealth. All along this route the mountains were off to the left of the road, either to the north or west as we skirted around them on the way to the coast. They are collectively called the Cordillera de Santa Marta, and this range is completely disjunct from the Cordillera Oriental of the Andes. The vegetation was an arid savanna with low trees of broadly spreading crowns, and the cleared areas in the earlier and more mesic portion of the route had a lot of these trees left in the pasture, obviously for shade for the cattle. There seemed to be a lot of ranching throughout. Sometimes there was ample water in areas where there were streams.

As we approached Riohacha from the south it was extremely arid, and the town was very hot. We arrived at 11:50 AM, and I took a taxi to the herbarium at the **University de la Guajira (HG)** but the driver insisted that there would be no one there, as it was their lunch time and that they would be off till 2:00 PM. I took my chances and was fortunate



Keery Johanna Rojas

enough to encounter some ladies who were just leaving to go to lunch. I asked for the Curator Keery Johanna Rojas, and fortunately one of the ladies called her on her cell phone. Keery Johanna came and walked me over to the herbarium. They did not have many specimens, and I finished determining them in about two hours. Later Keery Johanna went with me in a taxi to the bus station. While we waited for the bus I bought my lunch and dinner, three chicken empanadas, but I did not detect anything in them that resembled chicken. Nevertheless they were good and I ate them in the bus. My method of eating on this trip was usually like that, just grabbing something before getting onto the bus. I also carried lots of things including candy and

some fruit in my briefcase that I carried aboard the bus. It was an efficient way to keep on the move.

In addition to the road to Santa Marta, which heads southwest from Riohacha then straight west along the margin of the Caribbean, there is a good road that heads nearly straight east and ends on the Golfo de Venezuela, which is formed in part by the Guajira Peninsula jutting eastward and forming the border of Colombia. Another less major road heading northeast out of Riohacha is directed close to the ocean and meanders all the way to the end of the Guajira Peninsula. The eastern edge of Colombia along the border of the Department of La Guajira is bordered by the Serrania de Perija.

In 1993 I had entered Cordillera Oriental in western Venezuela. I had rented a car in Maracaibo and followed the mostly secondary rocky roads as far as I could. Eventually the road got so steep and boulder strewn that I severed the gas line. When I discovered the leak I headed back to civilization as fast as I could, but I managed to get only to a small village with no gasoline station. The area was heavily controlled by a wealthy rancher who immediately began to make demands of me, accusing me of being a drug smuggler. Thinking that he was in fact an authority, I gave him my license and passport, and he claimed he was going to check them with the military. He left me alone to press plants since I could not leave anyway. Later he promised to get me some gasoline and took me up into the mountains to his ranch where I encountered an evil-looking bunch of heavily armed cowboys who were talking amongst themselves about my money. The rancher seemed less evil-looking and seemed to be genuinely interested in befriending me, offering me lunch and beer but I was only interested in getting gasoline and returning to my car. I had taken masking tape and thought that I had the gas line repaired, and I was anxious to get fuel and leave before dark for the long drive back to Maracaibo, but the rancher was only interested in trying to detain me. Apparently he thought I would be able to get him a visa to the US, which he was anxious to visit. He was a heavy smoker and was convinced that there was a test which would tell him if he was going to get cancer.

Finally in desperation I told him that I was going to walk back even without the gasoline and headed down the hill, but he then grabbed a gallon can of gasoline and got into his pickup but soon I discovered that we were not heading in the direction of my damaged car. He insisted on going to see a girlfriend and having a cup of coffee. With all of his delaying we did not get back to my abandoned car until dark, and I had to drive back to Maracaibo using only some cryptic notes I had made on my pathway in. The next morning I again found the tank empty because my temporary repair had not worked. Still I managed to make it to a station for fuel and to a VW dealership to get the gas line replaced. The kidnapping by the Venezuelan rancher had ruined my day.

The road from Riohacha to Santa Marta was filled with small towns, but there were two substantial towns, Palomino and Pueblito, where the road bends SSW on its way to Santa Marta. Most of the towns have those cursed speed bumps, and it really slowed us down. The area was substantially more mesic than Riohacha, and the roadside was filled with trees that often blocked the view of the ocean to the north and the Sierra Nevada to the south. At one point the road near Palomino, the road was crowded by the mountains that we were just on a shelf along the edge of the Caribbean. When we arrived at the bus terminal I asked about hotels, and there were two just across the main highway. I had some difficulty negotiating the highway with my bag, since it did not seem to have any formal stop light. I passed by two grocery stores and went to the second of two hotels, one called the Colombia Real. I got an air-conditioned room for 29,000 pesos which is an extraordinary deal. I think people were being kind to me because I was much older than the average person traveling these days!

By this time in my trip I was virtually out of money. I went to the grocery store to try to use an ATM but could get no money. Fortunately the grocery store let me use my credit card to charge my groceries, so I bought a piña, an apple, a mango, three bananas and a bag of tangerines. I really had not eaten much beyond sandwiches and empanadas since I arrived and needed some fruit. It was in fact the first opportunity that I had to even walk into a grocery store since I had been in Colombia.

On **Wednesday, 28 October** morning, I took a taxi to the **Universidad de Magdalena (UTMC)** in Santa Marta. I walked around the campus for 40 minutes in the intense heat before I found the super cooled herbarium. The transition is immense and it did not take long before I had to put on my jacket. The UTMC herbarium is very fine and rich in Araceae. It is clearly the largest and most species-rich herbarium in the whole of northern Colombia. I worked in the herbarium all morning, but since the staff take off for two hours for lunch, I had to leave. The Curator Eduino Carbonó took me to a shopping center where I found a new mouse for my computer, and then I had lunch and took a minibus to town, and then a moto to see the Caribbean port area. Perched on the back of this little bike and hanging onto the frame, I rode with him about two kilometers to the waterfront. He rode very fast and went quickly around the corners. On arrival I took pictures of the interesting waterfront with a few touristic things, the interesting sales people and other strange people lying about. Then I walked back toward the centro, but I really had no idea where I was. Eventually I found a bus stop and asked about a bus to the University and was eventually transported right back to the main gate of the University. I made the mistake of leaving the herbarium in my heavy corduroy jacket and it was super hot so I again arrived back sweating to again enter the deepfreeze herbarium.



Eduino Carbonó

The Santa Marta area is very much under-collected, at least in part because it is mostly inhabited by indigenous groups that don't allow collecting in their region. These people zealously protect their regions and can sometimes get rather violent. My colleague Al Gentry and Hermes Cuadros, who I would be seeing the following day, once had a serious encounter with these tribes. Al and Hermes apparently were collecting in an area that was considered sacred burial grounds and were accosted by a large group of indigenous people. They tied them to a pole and then beat them with sticks until they felt they had been sufficiently punished.



Hermes Cuadros

Despite the fact that the herbarium in Santa Marta does not have a rich set of collections from the Sierra Nevada de Santa Marta the herbarium nevertheless had a lot of interesting specimens. It is clearly an area I need to return to in order to collect because most of the species there seem to be endemic.

I finished in the herbarium about 6 PM and started walking back to the hotel. I knew that it was a long way but the taxis were all full. Finally I found an empty taxi car and waited until the driver showed up. He initially said that he was “ocupado” but again when he saw that I was just going to walk on he relented and asked me where I was going. He was apparently supposed to be going to pick up his girlfriend, a student at the University, so he called her and explained that he was going to take me to my hotel before picking her up. My “old man” image helped again.

Every night I downloaded images that were taken during the day, trying my best to clean them up, organize, and even name them, so it took a lot of time each night.

On **Thursday, 29 October**, exactly a week after I left Bogotá, I left Santa Marta on a bus for Baranquilla, the fourth largest city in Colombia. It lies at the mouth of the Río Magdalena and is an old city. It is one of the earliest founded, being the main entrance point to the highlands in the interior and accessed by means of a long river which dissects the Cordillera Oriental and the Cordillera Central. Even after formally entering the city limits we drove for another 40 minutes before we came to the little bus station for the particular bus company I was using, which basically offers independent and frequent trips to cities in the north of the country. I was told that the office was not far from the **Universidad del Atlántico (DUGAND)** where I was to find my old friend and Colombian botanist Hermes Cuadros, but when I got into a taxi I had to be more specific because apparently there is northern and a central campus. I guessed it was the northern campus. Upon our arrival, however, we could find no one who knew anything about the herbarium or any employee named Hermes Cuadros, even though he had worked there for 15 years. Nevertheless, a kind professor agreed to help me find Hermes, and we went to the Administration Building where someone knew

where he was. Their collection was quite small and totally undetermined, but I was able to determine most of the collections and take pictures of those which were of special interest, either new species or species which I wanted to record for range records.

At lunch time Hermes and I headed toward the bus station for the commuter bus and stopped for lunch on the way. After I had boarded the bus for Cartagena, Hermes called Santiago Madriñán, the Director of the **Jardín Botánico de Cartagena “Guillermo Piñares” (JBGP)**, to let him to know when I should be arriving.



Santiago Madriñán

The trip from Baranquilla to Cartagena is mostly along the beautiful Caribbean coast and thus very built up with resorts and condos. The distance is only 120 km so it barely took two hours to get there. At the bus terminal in Cartagena I was met by a driver sent to pick me up and take me to the JBGP which is

located about 40 kilometers west of Cartagena near the village of Turbaco. The botanical garden was founded about 20 years ago in a piece of virgin forest and has had lots of species brought in and planted there but it had been essentially abandoned for a number of years. There is now an attempt to renew the garden and its herbarium. The new Director, Santiago Madriñán, is still officially a professor at the Universidad de los Andes in Bogotá, but he is working without pay as Director. A number of interns from the Universidad de los Andes are now working there. Santiago had offered to let me stay in his house that he has rented on property near the botanical garden, and the driver took my bags there after first delivering me to the botanical garden where I met the staff.

Madriñán was in a meeting with the Board of Directors when I arrived but he returned to the house about 8:30 PM. The following day I went to the Botanical Garden with the two interns, Paola and Nicolas, who are also living at the house. They are both students at the Universidad de los Andes and working on projects in the herbarium. **Friday, 30 October** was the only day that I shared with the others because that weekend was the beginning of a

long weekend, Monday being a national holiday. I was actually lucky to be at this point in my trip since they let me stay in the house and gave me the keys to the herbarium for the next two days. I spent **Saturday, 31 October & Sunday, 1 November** working there describing in detail five new species. The herbarium was a ten-minute walk down the hill and through the botanical garden. On Sunday I spent some time taking pictures of Araceae in the botanical garden, but most of what they have there are relatively common species, with the exception of a big *Philodendron* that I did not know. I prepared a voucher of its inflorescence, the most difficult and problematic part of determining *Philodendron*, and figured that if it proves to be new I can get them to voucher it later.

I took off at about 5 AM **Monday, 2 November**, for the Terminal Terrestre. I had made arrangements to be picked up by the caretaker of the botanical garden. The tuk-tuk that picked me up was an open vehicle with a roof, powered by an ordinary small motorcycle. It was completely open on the sides, and it was a little chilly in the early morning air. Since Tumbaco is located only a short distance from Cartagena and at a higher elevation, you can easily see the lights of the city down toward the coast. The tuk-tuk driver took me all the way to the bus terminal in about 20 minutes. I searched for the bus company that was supposed to have a bus leaving at 6:30 AM, the earliest bus for Bogotá. It proved to be a 7:00 AM departure but it was a bit irrelevant for a bus trip that purportedly was to take 22 hours.

The trip from Cartagena took me back to Baranquilla before departing north up the valley of the Río Magdalena. This was the major entry point for the Spanish who had a major fortress in Cartagena which still stands today. Boats carried immigrants up the river to major ports along the river, places like Barrancabermeja and Mariquita. The later was where Jean Linden collected a species of *Anthurium* that remained undescribed until I recently named it in his honor.

In 1968, I was sitting in a park in Bucaramanga with my wife, brother, and sister-in-law, when a stranger approached to express his sympathy on the assassination of Robert Kennedy, Jr. Later that day we boarded a train to Medellín that

passed through Barrancabermeja. Upon our arrival the next day in Medellín we departed across the valley walls to a small village where the train, a single coach with about 20 seats departed up the Cauca River valley to Cali and to Popayan. That train no longer takes passengers, if it exists at all.

Early plant explorers collected along the Río Magdalena in places like Mariquita. I recently described a new species collected by the Belgian botanist Jean Linden in the late 1800's in this little river port. Previous explorers could only access the country by following the rivers. The area around the rivers is hot and unpleasant so the cities are located higher upland. Many of the earliest collections made in Colombia were from the area around Bogotá in Cundinamarca Department.

While there was a bit of four lane highway south of Baranquilla the road soon turned into two lane tracks. The driver seemed to be in no hurry to get to Bogotá. I guess that is why they say it can take 22 hours! We passed through a number of small- to medium-sized cities in mostly flat country. For most of the time we could get a view of the Río Magdalena off to the west. Eventually the road swung considerably to the east and by noon we ended up back in Aguachica where I had been one week earlier on Sunday. I had hoped to see the area between Baranquilla and Barrancabermeja, but it was well after dark when we arrived there.

I had taken this bus specifically because I thought we would arrive at about dawn and so I would not have to trouble with finding a room. Surprisingly we arrived in Bogotá at 2:50 AM on **Tuesday, 3 November**, too late to go find a hotel and too early to go to the University, so I found a little restaurant and ordered some pastry, empanadas, and several rounds of coffee before I took a taxi at 6:30 AM to the **Universidad Nacional (COL)**. I had to return to the National Herbarium pay for my loan. Carlos Parra had gotten it weighed and priced for mailing while I was in the north of Colombia. Julio Betancur arrived shortly after I did and we had a coffee in his office.

I had also made arrangements to visit my old friend (and former boss) Enrique Ferrero, now the President of the Colombian Academy of Sciences. His office was not very distant from the herbarium and I went there by taxi, tagging along my enormous bag. He introduced me to his staff, gave me a tour then we had a short conference before I took off for the **SINCHI Herbarium (COAH)**. It was one that I had



Dayron Cardenas

missed during my Bogotá herbarium tour. The SINCHI Herbarium is dedicated to plants from the Amazon basin and is curated by Dayron Cardenas, who is also a productive collector. The herbarium is located in the older, more historic portion of Bogotá, and is well run, nicely staffed, and rich in material.

My friend and colleague Alejandro Zuluaga who works on *Monstera* is currently working at the herbarium and Alejandro helped me find a different lens for my camera since my lens had ceased functioning. It was a temporary measure but at least I now had a lens that did work. I had to basically stand on tip toes with the specimen setting on the floor owing to its long focal length.



Alejandro Zuluaga

I finished at SINCHI just in time to make it by taxi to the bus terminal for a bus to Neiva. Another staff member went with me to the bus terminal and helped me buy my ticket. It was not a long wait before the bus departed, but since it was rush hour we were nearly two hours just getting to the edge of Bogotá. The bus was quite nice, more expensive than the average and with a clean restroom, individual movie monitors on the seat backs and, as always, too much air-conditioning. I have learned to carry aboard all the clothes I have with me including my hat. So with a hooded sweatshirt, my heavy corduroy jacket and a heavy jacket over my legs, I managed to stay warm.

After reaching the southern edge of the city we were soon roaring down the autopista headed for Girardot and the Río Magdalena. We crossed over the

Magdalena going toward Ibagué, and then headed south along the western bank of the Río Magdalena.



Hilda del Carmen Dueñas

We arrived at a small terminal north of the city of Neiva about 11:00 PM. I was met by Hilda del Carmen Dueñas, the Curator of the **Herbario Universidad Surcolombiana (SURCO)** in Neiva. We went by taxi to my hotel. She said that a couple of students would pass by in the morning to fetch me and take me to the herbarium.

Shortly after my breakfast on **Wednesday, 4 November**, the students, Ruben Dario Cerquera and Julian Camilo Arteaga arrived and we went to the herbarium. I had not expected to see many herbarium specimens of Araceae but they had a lot of material including many new species.



Ruben Dario Cerquera & Julian Camilo Arteaga

Taking pictures with my temporary lens was a pain, but I finally finished about noon. When I was ready to hit the road for Medellín, my next stop, Hilda took us to lunch at the Hotel Matamundo, an historic old hotel near the terminal. When we arrived I realized it was the same hotel I had stayed in three years earlier when I stopped in Neiva on my way to Florencia.

After a nice lunch they took me to the terminal but there were no buses at all going to Medellín. I was still intent on heading that direction so I took a bus to Honda, a town along the Río Magdalena with buses making connections to Medellín. Unbeknownst to me the bus had a scheduled stop in Ibagué which is many miles out of way. I was surprised, to say the least, when we arrived in Ibagué! Owing to this long delay we did not make it to Honda until after 9:00 PM. I had planned to stay overnight with Felipe Cardona, but did not want to be arriving at his apartment at 1:00 AM. I decided to stay in Honda and took a taxi to a nearby hotel. It was a simple little

place run by an old man but surprisingly it had wifi that actually worked.

It was raining **Thursday, 5 November**, so I walked to the terminal to get a taxi, not wishing to drag my roller bag up the muddy street. I was able to get a bus within about 40 minutes of my arrival and was headed off for Medellín. The bus took the same route that I had taken before on trips from Medellín to Bogotá, and it ended up in the north edge of Medellín at the Terminal Norte. That station is only a short taxi ride to the Jardín Botánico de Medellín so I went there first.

I decided to enter at the old gate in the north end of the garden where the herbarium used to be located, but it was a mistake because the new herbarium is closer to the gate on the south end of the gardens. I had to drag my bag around so much that I feared the



Alvaro Cogollo

wheels on it would be worn down to their axils before returned. This has happened to me before, especially when the weather is hot.

I spent the rest of the day working at the **Jardín Botánico Joaquín Antonio Uribe (JAUM)** herbarium, where my old friend Alvaro Cogollo is the Curator. They have a wonderful collection at least partly owing to the early association with the Missouri Botanical Gardens. We once had a “convenio” with them, a field vehicle positioned there, and even occasional full time collectors situated in Medellín. It was a remarkably productive time. Then the rules changed and it was difficult to work in Colombia at all. We mostly moved our operations to Ecuador and Peru which were friendlier to our collaboration.

Felipe Cardona, Curator of the HUA herbarium came to the Garden about 5:00 PM and we took the metro south to Invigado where he lives. A suburb of Medellín, Invigado is located at the southern edge of the city, but it lies



Tom Croat, Felipe Cardona

on the big north-south metro line so it is very convenient for him to travel to the **Universidad de Antioquia (HUA)** where he is the Curator of the herbarium. Felipe is one of the principal Aroid taxonomists in Colombia and an expert on the Aroid genus *Spathiphyllum*.

The following days on **Friday, 6 November & Saturday, 7 November**, I worked all day at the HUA herbarium at the same university and managed to finish around 5:00 PM. Beer arrived in a box at closing time so we had a happy hour with many other staff members arriving. Later we went across the river to an area south of the **Universidad Nacional de Colombia - Sede de Medellín (MEDEL)** for more night life. I had to abandon plans for revisiting that herbarium on this trip but I had visited it only two years ago. It has a good collection with many unique collections but its Aroid collection is certainly smaller than those of HUA and JAUM.

On **Sunday, 8 November** I took a bus to Quibdó, the capitol of Chocó Department and the area of the highest species diversity of plants in the world. Felipe and I had purchased the ticket on Saturday morning and already there were only three seats remaining. The southern bus terminal is very nice with a parking garage beneath it and elevators to bring your bags up to the departure level. The bus was already loading when we got there, and I was soon heading for Chocó.

I used to know the route quite well since I had driven there many times from Cali. The area to the south of Cali is mostly built up all the way to the city of Caldas. Shortly south of Caldas the road branches off to Quibdó, passing through a number of towns heading in an easterly direction, the largest of which is Amagá before you get to Bolombolo on the east side of the Río Cauca, where one crosses the river. From Bolombolo the Río Cauca heads southeast before reaching La Pintada. This is now a huge city but in 1968 when I traveled in Colombia it was just a small town with train service to Cali and Popayan. That train traveled all the way down the Río Cauca as far as Popayan.

After crossing over the Río Cauca at Bolombola the road heads south along the west bank of the river to Peñalisa, then further south, toward Bolívar, crossing

past the road to Salgar on the left, where I had years ago collected the type of *Anthurium salgarensis*, and further on the road to Caramanta on the right. All the branches are now well marked.

In the past we had to take great care to not get diverted off the main road. It was on the road to Caramanta and Jardín that I was stranded one night with Adrian Juncosa when the lights went out completely on the old Timothy Plowman Dodge truck that we were then using. Another time near the Bolombolo bridge we hit a “policia muerto” (a large lump of concrete in the road designed to slow you down). We did not see it in the dark and the rain and it caused the battery to leap out of its cage and the distributor to come apart resulting in a broken rotor. Fortunately we coasted onto the middle of the bridge and had the road blocked in both directions so there were eventually lots of trucks waiting for us to get out of the road. Alvaro Cogollo, my only passenger, insisted that one of the trucks would have a rotor for our old Dodge pickup and he proved to be right. In Colombia and elsewhere drivers keep an assortment of old parts for just such an emergency. Once the used rotor was stuck on the shaft the engine started and we were off again.

On my trip to Quibdó we reached Bolívar in the western part of Antioquia Department, the last large town on the way to Quibdó at about 9:30 AM and crossed the Chocó border at the windswept summit at 10:00 AM.

I once spent the night sleeping there along the road in a Renault 4, a tiny but very field worthy vehicle that you used to be able to rent easily. Now all the cars have hardly any clearance and can't be used on muddy roads or road with large stones. The “quetra” and the VW Beetle were always my favorite cars because they would go almost anywhere owing to the short wheel base. I had a fold up metal cot that was about 6 feet long. I stuck it into the back end after raising the trunk lid, then propped up the protruding end with some boards and put a tarp over the back of the car to shield me from the rain. It was very windy and cold there, but my sleeping bag was enough to keep me warm.

I had not been on the Bolívar-Quibdó Road since 1997 when my student John Gaskin and I went to the Chocó. We had been warned repeatedly that it was too dangerous to drive the road owing to the presence of the guerilla group known as FARC which had terrorized all the inhabitants into leaving. Because of this we took a long detour, driving all the way to the Department of Rizaralda, then taking the road down through Pueblorico to Santa Cecilia and on to Istmina and north to Quibdó. All we were able to rent was a Renault 12 which was barely able to drive over a brick if it was on its edge. In one area near Santa Cecilia the ruts were very deep and we had to carefully remain astride them to prevent being hung up on the high areas. By the time we got to Quibdó after several days of collecting, we realized that we no longer had enough time to make our way back to Medellín before our plane returned to St. Louis. I told John that we had to take the “Ruta Peligrosa” whether we wanted to or not. John insisted on flying back rather than going with me in the car.

So early on a Sunday morning I headed for Bolívar, intending to head straight through as fast as I could without stopping in hopes of missing any banditos. Nevertheless, the vegetation which was overwhelming with interesting and new species compelled me to stop several times to collect. The once vibrant little towns were completely empty with boarded up windows. It was an eerie sensation. I finally made it to Bolívar by mid-afternoon and felt relieved that I had made it back without incident.

Little has changed in the past 18 years. The road is now partly paved or being paved but it is mostly very bumpy and the vegetation has not changed either. I was surprised how many species of Araceae I saw along the road, especially after we got to El Carmen. I really must return there again when I have time to collect. I am expressly prohibited from using funds from this OPUS grant to do any collecting so it is tough going past all this wonderful vegetation knowing that I can't collect it.

I had difficulty finding a hotel for some reason when I arrived, having to stop at three hotels before finding a room and paying more than I had been paying in other cities of comparable size. Despite this everything went remarkably well there. In the morning on **Monday, 9 November**, I took a taxi to the **Universidad Tecnológica del Chocó Diego Luis Córdoba (CHOCO)** which is now located on a new campus and the herbarium is now in a modern, air-conditioned building, not the muddy little place in the middle of Quibdó as when I visited there last. The herbarium Curator Leonardo Palacios let me use their internet cable for looking things up on Tropicos, and I never had a better connection during my entire trip. I was even able to upload three or four days-worth of photographs during the day. They had a lot of new and undetermined collections there, but I managed to get through with all the photos by late afternoon. One of the young herbarium assistants, Harley Quinto Mosquera, took some money and



Harley Quinto Mosquera

went to the bus terminal to purchase a night bus ticket for my return to Medellín later that night. The bus was to leave at about 6:30 PM and after I finished packing up all my stuff another student, Juliana Arboleda Rivas, offered to go back to my hotel with me to get my bag, then accompanied me to the special bus terminal for that specific bus. It was a

good thing she did since this bus departed from the eastern edge of Quito near the road back to Bolívar.

Everything went well until nearly midnight when the bus stopped. There was a big landslide that closed the entire road. When I realized that the landslide would cause me to get back to Medellín too late to make it to the airport for my 8:30 AM departure that had been arranged for by the Curator at the **Universidad ICESI (ICESI)** herbarium, the bus driver suggested I depart with a small group that had arranged to have someone meet them in a car on the opposite side of the landslide and then go on to Medellín. Sadly, the landslide proved to be unstable and was too deep and muddy to cross with the luggage so I returned to the bus for the remainder of the night. Initially people



Juliana Arboleda Rivas

were talking and making lots of noise but toward morning it got quiet. Still, sleeping was a challenge. At 7:00 AM **Tuesday, 10 November** the road crews arrived and they began scooping up the landslide with a bit CAT frontend loader and hauling it away in a series of big dump trucks, but eventually the dump trucks stopped returning, and the CAT loader worked alone, moving the mud, rocks and even large trees to one side of the road. Among those in the crowd watching was a man with a cell phone and he offered to call Felipe for me, and I asked Felipe to contact María Camila Pizano, the Curator of ICESI who had arranged for the ticket. I was hoping that owing to the situation she could cancel the flight and get her money back (apparently she did).



María Camila Pizano

After about two hours of work the big frontend loader finally broke through to our side of the pile. There was an interesting Anthurium in the chaos, still in perfect condition but imbedded in the mud and out of reach. With each thrust of the front end loader it was pushed ever nearer but just as I was about to reach out and snatch it, the bus started honking for the passengers to return to the bus. We were in the lead and the driver did not want to be end up behind the long row of buses, trucks, and cars waiting to get on the road.

We arrived back in Medellín about 1:30 PM and I immediately went in search of a telephone to call Felipe to see whether he knew anything about a rescheduling of my flight. Since they had no idea when I would arrive in Medellín I assumed that they had not done so, and I arranged for bus to Cali. The earliest was not leaving until 4:00 PM so I waited a long time.

We took the route that I was now very familiar with out of Cali but after we crossed over the divide and headed down toward the Rio Cauca we encountered some really exciting scenery. The sun was setting and a seemingly endless series of foot hills were exposed in the west leading to the Cordillera Occidental. To the east there were many hills and valleys as well. Finally, it was totally dark and there was nothing to see but the dreadful movie. The movies are always American films with Spanish words and the volume is so low that you can't really hear at all so you just have to follow along. They seem to present action movies with lots of noise and with little plot so they are usually easy to understand.

We arrived in La Pinada at about 9:00 PM but did not get into Cali until nearly 1:00 AM, and I was met by two young men holding a sign with my name. They went with me by taxi to a nice neighborhood near the Universidad ICESI called the Hotel Casa Franco in the south of Cali. It was really a gigantic house which had been converted into a hotel. My room was immense, really a suite of four beds and was equipped with a very nice wide screen tv, wifi and refrigerator.

The following morning, **Wednesday, 11 November**, the Curator at Universidad ICESI, María Camila Pizano, came to the hotel and we had breakfast together on the patio before going to the university. During the course of the morning I was introduced to the Dean of Science and even the President of the University. I was also provided with a helper for the day, John Carlos Salazar, who agreed to do all of the imaging for me. They have one of the special digital photo boxes that were provided with funding from the McArthur Foundation when they were supporting the imaging of type specimens in South American herbaria. It is equipped with a digital camera on the top. Thus I was able to concentrate on determining collections and let John do all the imaging.

By the end of the day I had finished and was returned to my impressive hotel by María Camila. She even took me to a supermercado on the way. Traveling by bus as I had been I rarely saw good stores and just had to hope that I could snatch a few cold empanadas on my way into the bus or depend on the vendors who come on the buses from time to time selling things.

María Camila had called the Curator at the herbarium in Tuluá which was my next stop. **Thursday, 12 November** I took off at 7:00 AM for the long trip to the terminal in the north edge of downtown. Upon arrival in Tuluá I called Alejandro Castaño, the Curator of the Herbarium, and he drove me out to the **Jardín Botánico Juan María Céspedes (TULV)**, named after a local botanist from the region. The road to the garden is still not paved and is very bumpy. The garden is still being developed but the herbarium is air-conditioned and has a large classroom where I was able to work with specimens in not so cold an area. Their collection is rather large, and I managed to get through the entire set before the end of the day. The collection at TULV is perhaps one of the more underused herbaria in Colombia owing to its isolated location and its lack of university connections. It is part of a governmental agency which includes a Natural History Museum in Cali. The land for the Botanical Garden was acquired inexpensively and the herbarium was located there some years ago. Still the facilities are excellent and the collection has the potential of being more important once it is a bit easier to reach the botanical garden, and especially if the botanical garden develops its full potential.



Alejandro Castaño

Alejandro took me to a place in Tuluá where I could catch a bus to Buga. From there I caught a bus to Palmira, arriving in the middle of the town about 8:30 PM. I took a taxi to the Hotel Las Victorias which proved to be the most expensive place I stayed in, at least in Colombia. It was a once fancy place but the rooms were outdated with ancient televisions and a noisy fan. I had stayed in much better places for a third of the price but since it was late and the place was within walking distance of the herbarium I decided not to try to find another place.

On morning of **Friday, 13 November** I took my herbarium work tools and walked about a block to the gate of the **Universidad Nacional de Colombia (VALLE)**, Curator, Luis Eduardo Forero. I also met



Luis Eduardo Forero

a young man named German Muñoz who works at the herbarium and is very interested in working on Araceae. I showed him Lucid and promised to send all sorts of material to him to train him in Araceae. The herbarium in

Palmira is filled with many new species and it will be good to have someone working there that can help me get them described.

I finished with my work about 1:00 PM and German took me to the bus terminal where there was a bus soon departing for Cali. It made it to the Cali bus terminal in about a half hour and I went up to the Trans Ipiales office to retrieve a package that contained my computer cord that I had left on the floor where I was working in Tuluá. Fortunately my machine had had enough battery for me to finish in Palmira. I got a bus ticket on the first big bus heading to Ipiales near the border with Ecuador. It was the same trip that I had made many times before.

The bus did not make it to the border until about 1:00 AM **Saturday, 14 November** and upon arrival I took a taxi to the border. Going through at that time of night is very easy because there are no lines at the immigration desks on either side of the border.

Having gotten into Ecuador I took a taxi to Tulcán and soon boarded a bus to Quito. They start making runs to Quito by 4:00 AM. I had requested that someone work at the **National Herbarium (QCNE)** on Saturday so that I would be able to get in, after leaving my bags at the Las Terazas Hotel. I have stayed there in past as it is the nearest hotel to the herbarium. I walked to the herbarium hoping that there would be someone working, sadly no one was there. Back at my hotel I found in my email that they had not been able to honor my request. As I was already behind schedule, I could not afford to sit idle in Quito for two days. I tried to contact Wilson

Quishpe in Loja to see if I could work there on Sunday, but the number I had did not work. I had also contacted Xavier Cornejo to see if I might be able to work there on Sunday but that was even a more remote possibility, so I decided to head straight for Peru. I took a taxi to the South Terminal and caught a bus to Huaquillas on the Peruvian border about 2:00 PM. The bus arrived in Machala about midnight and in Huaquillas at 2:00 AM. I got to the nearby Hotel San Martín Porres and spent the night there.

In the morning **Sunday, 15 November** I took a taxi to the border crossing, paying the taxi in dollars (official Ecuadorian currency). After getting my passport stamped for leaving Ecuador and entering Peru (conveniently done in the same room), I took another taxi to Tumbes. He also accepted dollars for his trip (\$15). I had no Peruvian currency but the driver agreed to take me to a casa de cambio to get Peruvian soles on the way to the Tumbes bus terminal. I just exchanged \$40 but it turned out that this was the best exchange rate I have gotten in Peru at 3.25 per dollar.

The vegetation along the Ecuador-Peru border is very arid except in areas along rivers where they irrigate and raise sugar cane and bananas. Tumbes is a big and bustling town now, as it had grown immensely since I was last there 52 years ago.

Back then there had been no land crossing to the Ecuadorian road that led to Machala. Instead I had gone on a bus through arid country with large cacti to the port of Puerto Bolívar where at 9:00 PM a boat departed for Guayaquil. I remember arriving in Guayaquil about 2:00 AM, then left the dock area to find a place to stay. The police said that it was dangerous to be walking the streets so I walked right down the middle of the street, figuring that this was safer than the sidewalks where someone could jump you from a dark alley. I was always prepared to defend myself as I carried a long knife in my boot and in those days there was no reason to be suspicious of someone carrying a knife, just as we could regularly carry our machetes aboard aircraft.

In Tumbes I caught the first bus to Piura and then caught a car to Lambayeque and arrived about 8:00 PM. In addition to buses, one can nearly always find

a car that carries four passengers in addition to and often doesn't cost much more than the bus. Aside from being very uncomfortable compared to the bus (especially if you get the middle rear seat) the advantage is that the cars leave as soon as they get four passengers so you can often get to your location much more quickly than on a bus.

The road from Tumbes to Piura traveled mostly along the edge of the ocean. The area was extremely arid and most of the towns were small fishing villages, though a few of them appeared to be heavily involved with tourism with beaches and deep sea fishing establishments. Just behind the beach there would always be one or more streets running parallel to the ocean then no more than a hundred meters inland the terrain rose prominently displaying dry bluffs, these sometimes with low grade housing but almost never anything that looked very permanent. As the streams were consistently dry, I suspect the only source of water in that region came from wells.

I arrived in Lambayeque that night and got off at the only hotel that I saw, but it turned out to be very near the Universidad in Lambayeque. The hotel was cheap and even had wifi. I tried to upload images to the Cissus pdf server at MO but it proved too slow and the wifi was turned off at midnight.

The following morning **Monday, 16 November** I took a moto-taxi to the gate of the **Universidad Pedro Ruiz Gallo (PRG)**, named for a well-known botanist from Lambayeque. After a long walk around asking and being misdirected, I finally found the herbarium. Entering a class room on the way to ask questions I was attacked by a big black dog. What it was doing in the classroom I do not know but I elected to beat a retreat. I was disappointed to find the herbarium locked, but fortunately a professor working with students in a lab on live plants was kind enough to open the herbarium for me. She also telephoned a couple of students that were to come help me. One of them, Consuela Rojas, worked on Piperaceae. The other is interested in orchids. Both students



Consuela Rojas

expressed an interest in helping me with Araceae, so I promised to contact them later and provide them with more information about the Araceae of that region. While it is true that there are no Araceae along the coast, Lambayeque has cloud forest on the eastern edge of the department and the area has interesting and new species.

Since the herbarium at Lambayeque had few aroids I finished within an hour and then was taken back to the hotel by the two students. At the bus terminal I caught the next bus for Trujillo. Earlier I had called the Curator of the **Herbario Universidad Nacional de La Libertad-Trujillo (HUT)** in Trujillo, Eric



Eric Rodríguez

Rodríguez, to tell him that I was coming to the herbarium. Apparently the University was on strike and the professors were demanding more salary so the entire university was closed down. Fortunately Eric works very independently and agreed to let me in. The herbarium is located on a side street

with a separate entrance. It is very near the Plaza de Armas in the old part of town. When my bus arrived in Trujillo, I took a taxi and he was waiting on the street in front of the herbarium.

Due to the strike, there were no lights or running water, but we moved a table out into a hallway where there was a skylight. I went right to work with the determinations and got about half done before it got too dark to work. Eric then helped me find a small hotel run by a guy from Lima a few blocks away. The owner was useful because he knew all about which bus to take to get closest to the University of San Marcos Natural History Museum where the USM herbarium is located. In Peru you often need to know your destination to find the buses that go there. Lima doesn't have a central bus terminal, so different companies end up in different parts of the town. I wanted a bus company that arrived as near to the Museo de Historia Natural as was possible.

On **Tuesday, 17 November** in Trujillo Eric Rodríguez met me at the herbarium at 7:30 AM then left me there to go attend a mandatory strike meeting.

He showed me how to lock up the herbarium and to exit onto the street when I finished. At noon I returned to the hotel to get my big bag and took a taxi to the new bus terminal in Trujillo where there were frequent buses to Lima.

The buses were huge double decker types, with the lower level fancier and more expensive, but the windows are covered with a screen that precludes taking pictures out the window. I managed to find a break in the screening and was able to use this spot to take pictures. There was not much of interest since the entire stretch is desert with sand dunes but there are also some large stretches of mountains we went through.

I had previously driven this entire stretch between Olmos in the far north of Peru to Lima in 1997 after Peru had suffered a devastating series of rain storms on the dry Pacific slope of the Andes where it rarely rains. All the bridges along the coast had been washed away and I had to repeatedly drive through dry stream beds.

That El Niño event greatly affected much of my trip then, the most serious of which was that it washed out a bridge on the road from Lima to La Oroya. I was trying to make it to La Oroya late in the afternoon on the day of my arrival in Peru. I had rented a car, purchased alcohol and newspaper, and was heading into the mountains. I was completely ignorant of road problem and arrived about 5:00 PM at an area where trucks were lined up along the road. Impatient, I drove past all the big trucks only to find that the road was diverted to the bank of a river. Setting at the edge of the river, I hesitated driving in but the people behind me were honking and yelling, saying that it was ok to cross, that the river was shallow and that this was the only way to get to La Oroya. I got out and engaged my front wheel hub locks and then headed into the river. For about 20 feet I was making good progress even though the car was now in water half way up the side of the door. Soon the motor died but I was able to restart it and proceed but I soon realized that I was barely making contact with the stream bed, and I was partially floating and heading downstream. After the motor died again, I crawled out of the window to keep the water from

getting to all my equipment. Fortunately I had good plastic bags and tape, so working in waist-deep water through the window I managed to get all my possessions into bags and retrieved the stuff out through the window. There was a huge stalled Volvo flat-bed truck not far away with an indigenous man standing there. I tossed my bags up onto the Volvo then went back to sit on the roof of my car, only to watch the car slowly disappearing under the water. Eventually the current had carried my car downstream and smashed it into the side of a big truck piled high with fruits and vegetables with four indigenous people huddled in the cab. They seemed not to mind that my car had smashed into theirs. The following day I realized how fortuitous it was that I smashed into a large truck because only about 30 feet downstream where my little cork-like Suzuki was stopped was a waterfall with huge boulders. It would no doubt have ended up in the Pacific Ocean.

It started raining shortly after dark while I was still sitting on the roof of my car with my feet on the hood, already under water. I began to get cold and eventually abandoned the car and waded over to the big Volvo which was running its engine with a warm cab. I asked if I could sit in his cab and he allowed me to do that. The driver kept rolling down his window to listen for changes in the sound of the river for signs of a tsunami type event from a sudden wall of water. At one point he yelled that we should abandon the truck, and we jumped out into the water, only to find that nothing much had happened in the course of the water, and I only got colder and wetter again. Later I realized the jumping into the river would surely have been more dangerous than staying in the cab. About 10:00 PM a front-end loader appeared and offered to push the big Volvo to the opposite shore. Thus I came to be on dry land along with my possessions but my damaged and flooded rental Suzuki was out midstream and under water. At my request the big front end loader went out to retrieve my car. We hooked a cable to the bumper after picking it up with the scoop. Once raised up out of the water the car crashed forcefully into the fruit truck, but we ignored this all together and dragged the car to the shore.

Once ashore I opened the doors to empty the car of most of the water, then scooped out the water in the compartment below the door level with my hat and mopped up the excess water with my socks. Convinced that I had cleaned it out I laid plastic bags on the seats and the floor, crawled into my sleeping bag and tried to sleep. It was a fitful night with interruptions from some indigenous man who claimed that we were using his cable to extract my car. I paid him once but in the middle of the night he said that he had lost the money somehow and he wanted me to pay him again. I obliged, figuring that would get rid of him. He was present the next day and was pretending to help me clean up the engine. Eventually I realized that he had run off with the knife that I was using to clean up the points in the distributor.

The following morning I cleaned up the distributor and tried to start the engine, but it would not fire. I spent the entire day trying to start the car, even walking to the nearest town to see if I could get a mechanic. They said that they would only work on the car if I brought it to them. Finally about 4:00 PM, fearing that I would spend yet another night in a wet sleeping bag I appealed to a soldier on the shore to get some help from the departing trucks. When morning arrived a big Caterpillar crawler tractor entered the river to rearrange the stream bed to make it flatter. It even crawled down somewhat into the waterfall to move some of the larger stones. This enabled the trucks to start crossing. The trucks crossed all day long but upon reaching the shore after a 12 hour wait they were not interested in pulling some gringo's little car, so once they hit the beach they roared up the bank.

My appeal to the soldier was ultimately successful after he blew his whistle and demanded that a truck pull me off the beach. I soon found myself being dragged up the bank and up the steep hill to the nearby town. I was trying to start the engine by turning over the engine with the gear train but it would not start. Probably the battery was too dead or the ignition was still wet but eventually the engine roared to life, and I began honking my horn to stop the truck driver. After being released I saw no ill-effects from the dunking in the river

except for some noisy brakes but even that noise went away.

So it was not without memories of earlier trips I had taken as I bussed toward Lima on this current trip. The bus arrived in Lima on Calle 28 de Julio, which was the nearest station to the botanical garden. I took



Jorge Lingán

a taxi to the USM herbarium, then found a room at the Palace Hotel near the botanical garden. I was actually able to see the garden only a block and a half north along Avenida Arenales.

On **Wednesday, 18 November & Thursday, 19 November** my old friend and colleague Jorge Lingán

met me at the **Universidad San Marcos Herbarium (USM)** and worked with me for two days as I determined the collections. I took a massive number of images of undetermined collections, so many in fact that on the second day the camera ran out of battery before I finished. In any event it was time to leave to catch the bus to Oxapampa. The bus took a full two hours just to get out of Lima at that time of the night, but the seats were comfortable.

I actually got a little bit of sleep before reaching Oxapampa early the next morning **Friday, 20 November**. My old friend Rodolfo Vásquez and his



Rodolfo Vásquez

wife Rocío del Pilar Rojas met me at the bus station, took me to a hotel, and then to breakfast. Both Rodolfo and Rocío are from Iquitos and have worked to build up the field station and herbarium in Oxapampa after moving there nearly a decade before. They have ended up producing one

of the finest institutions that I have ever seen considering its size and meager budget. The **herbarium Estación Biológica del Jardín Botánico de Missouri (HOXA)** is excellent and has many new species. There are about six employees, and the compound is large and accommodating for every aspect of herbarium life. Rodolfo teaches a class for Peruvian students each year at the compound and still maintains a heavy collecting program.

I worked until about midnight the day I was there then walked six blocks back to the hotel. Early on **Saturday, 21 November** it was raining and I packed up, caught a taxi-moto on the street, a car to Las Mercedes, and finally a bus to Huancayo. Here we stopped in a zone where there were cars to Huancavelica and soon I was heading south to the capitol of the State of Huancavelica, in the back of a fast car, but as least I didn't end up with the middle seat. It was a bright and sunny day, good for taking pictures out of the windows, but the driver was driving insanely fast and roaring around curves so that we passengers in the back had to hang on tightly. The scenery was beautiful and we passed through several moderately large towns hidden deep in valleys. We arrived in Huancavelica about 4:00 PM, and I was hoping to find a bus or another car to take me south but the best I could arrange for was a bus that left Huancavelica for Ayacucho at midnight.

The town is long and narrow, restricted tightly by the steep walls of the canyon. It was Saturday night and there was a lot of street activity. I attended 5:30 PM mass at the cathedral then went back to the bus terminal for my computer and had dinner in a fried chicken restaurant where the owner was kind enough to let me work until 11:15 PM.

The sleeper bus left for Ayacucho at 12:30 AM and arrived in Ayacucho about 5:45 AM **Sunday, 22 November**. I found another bus in the bus terminal, Empressos Chanko, that was leaving at 6:00 AM, so the timing was perfect. This bus was not of such good quality and it was slow, stopping many times and often delaying before moving on. The route was again typical for this mountainous region with towns in deep valleys, first winding up out of green valleys to emerge on the summit of gently rolling hills which were essentially barren except for the presence of the common bunch grass which was prevalent everywhere. The highway was paved and in excellent condition, as was the case throughout the entire route. I can't vouch for the quality of the road between Huancavelica and Ayacucho since that portion of the road was at night, and I was trying to sleep, but otherwise all the roads I saw in Peru were in excellent shape, far different from their condition on my trip in 1963 where the roads were covered with large stones and there were frequent landslides that would stop you all together. When I was told by

Rodolfo Vásquez that to get to Cuzco from Oxapampa I would first have to return to Lima then take a bus down the coast to Ica and back up through the mountains to Cuzco I decided to try to make my way overland using the same route as I had used 52 years earlier. My way did prove to be arduous but took no more time than a round trip to Lima and a return to Cuzco. I just had to find a different form of transport between every town but usually the change from one bus to the next was quick.

We arrived in Andahuylas about 1:00 PM and I quickly found a minibus with about 12 passengers that was heading to Abancay. Andahuylas, like Ayacucho had grown completely up the sides of the valley and it appeared to be somewhat more mesic than Ayacucho. My seat was in the back row and at the end of the aisle so that I could extend my legs. Without that ability to move my legs I eventually get leg cramps so I have to carefully select my seat on long trips of two to eight hours. Of course some of these bus rides are as much as 14 hours but then I usually take a larger, more comfortable bus. The car rides are just as bad because they are cramped but the benefit is that they are much faster so you suffer for shorter lengths of time.

The trip to Abancay was pretty much a repeat of the last two legs of my journey to Cuzco except that the vegetation was even more mesic. There were large fields of corn and forage crops along the roads in the interior of the valleys but the same dry conditions on the ridge tops. Abancay was yet another sprawling valley town but not spreading so high onto the walls of the valley because the valley was broader there. Upon my arrival in Abancay, I took a taxi to the area where cars were loading passengers for trips to Cuzco. Unfortunately, I again had one of the rear seats. You have to be the first passenger to arrive to get the front seat, which rarely happens. In any event it



Washington Galeano



Percy Nuñez

was soon dark so that taking pictures was not an issue.

Our car finally arrived in Cuzco about 9:00 PM and I took a taxi to the Universidad San Antonio Abad, hoping to find a hotel nearby. The first place I checked was way out of my price range so I asked the driver to find a cheaper area. We turned left off of the main street and went about 4 blocks south to a cheaper district, one filled with small hotels but also auto repair shops and other businesses. The first Hostel was 60,000 soles and I chose to stay there.

The next morning *Monday, 23 November* I asked for directions to the **Universidad Nacional de San Antonio Abad del Cusco (CUZ)** and was pointed to a traffic light up the hill that was said to be the same avenue on which the university was located. I was just to go to that light and then turn right a few blocks. I intended to walk but just then a taxi stopped so I hopped in. Unfortunately the driver went a different route, leaving me somewhat disoriented. We arrived at the gate of the university and I soon found the herbarium but it was closed. I eventually found someone who called Washington Galeano, my old friend who is now the Dean of Sciences. He in turn called someone to let me in the herbarium so I was soon at work with the collections. They have significant collection of Araceae though with not so many new specimens being added recently and I found that most of the collections had been determined by me on earlier trips to Cuzco, especially those determined at one of the Peruvian Botanical Conferences which I attended a few years ago. I finished by noon and was saying my goodbyes to Washington and to Percy Nuñez, another botanical friend who lives in Cuzco but who works on projects with Yale University. I needed to return to my room to get my big bag but suddenly I remembered that I had not written down the name of my hotel. On leaving the hotel I had not even looked back to see what it looked like since the taxi arrived so suddenly. Normally I not only write down the name or take a hotel card but also photograph the front entrance to enable me to get back. I told my friends about my dilemma and they started asking me questions, mostly ones I could not answer. Attempts to recreate the route the hotel had recommended were unsuccessful, and after about an hour of walking around I began to think I was not going to be leaving

Cuzco soon. Percy suggested that we walk to the Policia de Transito which had an office near the university. So we walked about one kilometer back again. En route I remembered asking for the wifi code of the hotel. Casa Azul was the name of the wifi which I had written in my notebook and we assumed correctly that this was the name of the hotel. When we presented this information to the police they quickly found a Casa Azul hotel on their website. They called the hotel and were told that I was not registered there. Then I looked up the Casa Azul on Google, and it showed images of the exterior and the interior of the hotel and I distinctly remember the appearance of the lobby so I was certain that I was lodged there. Again they called and again were told that I was not registered there. I was beginning to believe that the proprietor was hoping to inherit my luggage. The police again called and asked the proprietor to look who was registered the day before. Fortunately at this point the hotel found me, and by bag, in their system.

I went with Washington and Percy to the hotel to get my bag and then went to the area where cars leave for Departments Juliaca and Puno. We were not able to arrange for a car to Puno but one was leaving promptly for Juliaca, not far from Puno. I was able to get the front seat and thus was able to get lots of pictures until it got dark. The road to the south drops out of Cuzco which lies at nearly 3400 m, then runs along a small river that is relatively flat most of the way through Sicuani. The road climbs to nearly 5000 m on the border of Cuzco and Puno Department. From there it is a gradual downhill slope but nearly flat most of the way to Juliaca, with many small lakes. Although most of the area is high and dry, there are lots of depressions filled with water with relatively little egress. This is the situation with the massive Lago Titicaca which lies on the border of Peru and Bolivia. It is the highest and largest body of fresh water in South America and has little water outflowing.

We arrived in Juliaca about 9:00 PM and I found a small hotel at the very area where the passenger cars aggregate to carry people to Cuzco. It was only later that night when I thought to download my images that I realized I had left my camera in the car I was riding in. I had talked a lot with the driver, and he knew exactly where I was so I was hoping that he

would find the camera and bring it back to the hotel before he departed with passengers heading to Cuzco in the morning. Nevertheless to be sure that I got my camera I got up at 5:00 AM **Tuesday, 24 November** when it was light and went out onto the street. Already there were cars waiting to pick up passengers and I asked about the driver of the little red Honda who came from Cuzco. These drivers knew him personally and showed me where he was sleeping in his car. I looked through the window but did not see my camera. One of the guys insisted on waking him up so they started pounding on the window. He woke up and promptly produced the camera. I was lucky to have gotten there before he departed.

From Juliaca I took a mototaxi to the bus terminal in Juliaca for 3.5 soles, a minibus to Puno for 3.5 soles, and a minibus to Desaguadero for 10 soles. Puno lies on the northwestern edge of Lake Titicaca at about 4000 m elevation. The trip to Desaguadero was more than two hours long, hugging the edge of Lake Titicaca with a narrow border and with mountains often looming close to the west. The entire area is arid despite the presence of such a large body of water and it is scattered with little farms and many small towns. Everywhere one sees older indigenous ladies leading a small cluster of sheep or occasionally a single cow, leading them to another area of meager pasture. Occasionally there were a few llamas grazing near the road. The clothing was typical for the region with the women wearing numerous flaring and colorful skirts and usually wearing a black bowler hat.

In Desaguadero it was unbelievably chaotic. This town, which lies on the southwestern edge of the lake on the Bolivian border, is separated from Bolivia by the narrow neck of a lake extension. The entire area is filled with people going opposite directions with little apparent signage to indicate where you are to enter or leave. I was immediately offered the services of a bicycle-cart and my big bag was thrown on top while I sat in a seat in front of the driver. The cart swiveled and enabled the driver to go pretty much wherever he pointed the cart. We moved swiftly through the throng of people and stopped at the most chaotic border crossing I have ever encountered. Throngs of people were in various lines directed toward various windows.

My driver helped by pointing to which line I was to be in. Once I got to the window I was told that my passport had not been stamped when I entered Peru in Tumbes. I figured that this would result in a fine but they simply said that they would not stamp it for my exit either but that since I was an American I would have to pay \$160 for a Bolivian visa. I had to get in another line to accomplish that. Then I had to go somewhere else to make a photocopy of my passport, my visa, and my entry stamp. They were very picky about the quality of my \$20 bills, rejecting about half of them. I asked if the Bolivian currency was any better in quality, but was told that the US would not accept any Bolivian currency. Bolivia is the only Andean country where US citizens have to have a visa. All of my other border crossings in the Andes were simple, fast and efficient compared to this one.

My bicycle cart driver then took me across the bridge to Bolivia and I intended to change money then take a car to La Paz. When I asked about where I could exchange money I was told that only on the Peruvian side could dollars be exchanged. My driver re-crossed the border to make the exchange, leaving me with the cart and soon returned with 260 bolivianos for the \$40 I gave him. I have no idea what the exchange rate was, just trusting him not to rip me off too badly. He did say that I did not get the best rate because of the “quality” of my bills. It reminds me of when I was in Burma where you had to have pristine bills or they would not exchange them at all. Finally I asked the driver about the cost of his services; 20 soles, exactly the amount of soles left in my pocket. I never recalled a time when my money came out perfectly on departure from a country.

We soon found a car heading for La Paz which is only about an hour east of Desamparados. This time I was the last passenger and got the worst seat of all, the middle rear seat which had some steel framework trying to work its way into my backside. I covered the seat with my bag containing my coat and sweatshirt but it was still an uncomfortable ride to La Paz.

In 1962 I crossed the Lake Titicaca much nearer Puno in a small wind-powered vessel that took us to the opposite shore on the Bolivian side.

Apparently the much easier route via Desamparados did not exist at the time.

The highway from Desamparados to the Bolivian capital passed near the south edge of Lake Titicaca, then we continued across a broad plain ranging from 3800 and 4560 m that was mostly devoted to pasture. It extends all the way to El Alto at the International Airport, one of the world's few airports where you can see your breath while waiting for your plane! As we approached La Señora de La Paz, we could see the snow-capped chain of mountains northeast of La Paz called the Cordillera Real, running northeast to southwest with its highest summit Illimani at 6438 m, and other peaks Huayan Potosi and Cerro Charkini that exceed 5500 m.

Upon reaching the outskirts of La Paz, I was stunned how much of the metropolitan area now exists on the altiplano. That part is now even considered a second city called El Alto and along with La Paz and Viachia, another suburb, makes up the metropolitan area of 2.3 million people. El Alto is the largest city populated with a mixed population consisting of mostly Aymara, plus Mestizos and Quechua. Averaging over 4000 m elevation, it is also the highest large city in the world. When I first visited La Paz in 1963 virtually no one lived up on the altiplano but now the entire area is built up with homes and businesses. The deep valley, with the original colonial city founded in 1548, is now seemingly all filled with even the steep valley walls heavily populated.

Gondolas with three person cable cars transport people constantly from the altiplano to the center of La Paz. They are inexpensive and efficient. After my car arrived in the north end of La Paz, I took a taxi to the opposite end of the city, to where the herbarium is located **Universidad Nacional (LPB)**, and whose Curator is Rossy Chavez de Michel. To get there and to avoid traffic jams the driver went up and down steep streets all around the inside bowl of the city. Since he had already stated his price for getting there, he was not just trying to run up the tab as if he had a meter but was rather finding the route with the least traffic.

We made it to the gate of the university and eventually found the herbarium. The herbarium is

located in the Chemistry Building, and it consists of a labyrinth of rooms all filled with compactors and the greatest assemblage of Merrill boxes that I have ever seen, all neatly marked with the family names. Just seeing the number of boxes of Araceae was intimidating because this was clearly not going to be a one day event.

Fortunately, I was able to stay at the home of my old friend Stephan Beck and his wife Carola who live only a few blocks from the university. Stephan and I first met in Göttingen, Germany when Stephan was a



Stephan Beck and his wife Carola

graduate student. Stephan began working in Bolivia and liked it so well that he stayed there permanently. He was instrumental

in the growth of the National Herbarium. Now retired, he still goes regularly to the herbarium to work on his research. After working at the herbarium he took me in his old side car motorcycle, with me and my bag perched in the side car.

Walking to his house, which was up a steep street near the University, was quite a workout at that elevation, and I found myself stopping to catch my breath. The first night I made the mistake of not pacing myself and felt like I was suffocating. The city is so high that I found myself panting with a racing heart each time we walked to his house.

I got some of the work done on the first afternoon of my arrival, and then had two more long days to finish, **Wednesday, 25 November & Thursday, 26 November**. I ended up with at least 600 plants determined, so Stephan was pleased.

He had made arrangements for me to visit the herbarium in Cochabamba on Friday and in Santa Cruz on Saturday, so on Thursday night about 9:00 PM he drove me to the main bus terminal and I got a sleeper bus to Cochabamba. The third largest city in Bolivia, it is located about seven to eight hours

southeast of La Paz. The bus was very nice with widely spaced seats that reclined almost flat. They have greatly improved the roads, and the drivers travel more slowly so you don't roll out of the seats on curves. Because of this it is actually possible to get some sleep.

When I arrived on early **Friday, 27 November** I was promptly met by Magaly Mercado, the Curator who took me to the **University of Cochabamba (COCH)**. The campus is located not too distant from the center of town and the building in which the herbarium is located is brand new. Since they had not even completed building the elevators, we left my big heavy bag in the bodega rather than hauling it up four flights of stairs. The herbarium is nice and modern and there is a spectacular view of the valley and the adjacent mounting from the windows. It was dry in Cochabamba since the rains had not yet started. I worked until lunch time, and then was invited to lunch by Magaly and we walk to a restaurant at the edge of the campus.

The collection of Araceae at BOLV was much smaller than that of the LPB herbarium in La Paz, but it contained several new species, and since I finished before closing time I took the time to describe one in detail. At 6:30 PM Magaly and I went by taxi to the main terminal. We had already made arrangements for the overnight bus to Santa Cruz in the morning so I had nothing to do but wait until 9:00 PM. I had carried with me a large supply of magazines for such occasions so it was no a waste of time sitting in terminals or even in buses as long as I could read.

The bus for that night's nine to ten hour trip on Empresa Bolivia was not half the bus I had taken the night before. The seats were closer together and did not recline much and had almost no leg room. Worse yet the bus was very hot and noisy from loose and rattling windows. Without a rest room, we had to wait until 2:00 AM when the bus finally stopped for a break. Upon leaving Cochabamba we headed east, then drove north over a range of mountains to Villa Tunari. We then headed southeast along the northern end of this range toward Santa Cruz, and straight south after we reached Montero.

By the time we reached Santa Cruz early the next morning **Saturday, 28 November**, it had cooled off

quite a bit. The city of Santa Cruz is huge, with 1.5 million people, about the same number as in La Paz, but the city differs in being is flat and hot with wide streets.

Upon arrival in Santa Cruz I called the Curator of the **Herbario Universidad Autónoma Gabriel René Moreno (USZ)** at the Universidad de Santa Cruz, Alejandro Araujo Murakami. He drove me to the herbarium which is part of



Alejandro Araujo Murakami

the Universidad Mayor de San Simon and located in front of the Parque La Torre. The collection at USC is quite species-rich and the physical plant is excellent. The herbarium is located in the middle of town just off one of the main streets. At lunch time many of us went to a local restaurant to eat but I still managed to finish going through all of the Araceae collections before their closing time at 6:00 PM.



Magaly Mercado

Alejandro drove me to the terminal to wait for my bus to take me to the Brazilian border at Puerto Suárez. This time the trip was to be longer still, purportedly ten to 11 hours, but fortunately the bus proved to be cooler, quieter, and more comfortable. I was lacking sleep from the previous three nights and was soon asleep till 4:00 AM **Sunday, 29 November**.

The bus to Puerto Suárez traveled across eastern Bolivia on mostly flat roads, but about midway to the border it crossed between two low ranges of mountains. At dawn I could see that the vegetation was dense and green, not at all like the dry vegetation I had seen up till now; clearly the rainy season had begun in this region in eastern Bolivia. It was my first trip this far east in Bolivia, and I knew that the area was not far north of the Gran Chaco, a region inhabited by a strange type of vegetation that survives alternating seasons of swampy and desert like conditions.

In 1962 I did not travel this way but instead went overland through Bolivia on the other side of the Cordillera Oriental and the Cordillera Central, through a vast upland plateau in central Bolivia. I took the train from La Paz to Oruro then past south past the Lago de Poopó to Mulatos, Uyuni, Atocha, Tupiza to the Bolivian border town of Villazon. From there I went south to the Argentine city of Jujuy, and later to Salta and Tucumán, where I went east to Ascunción, Paraguay and on to the Iquazu Falls, and then north to São Paulo, Rio de Janeiro, and Brazilia. At the time the upland Bolivian plateau was very rainy and the train often appeared to be traveling on top of the water with the tracks all under water.

On this trip I intended to cross Brazil in another place, which looked like the quickest route to São Paulo and Rio de Janeiro where I intended to visit herbaria. Once I found that there was a bus from Santa Cruz to the border I knew that I could make it across Brazil because that country is intersected with good roads and good buses.

The Santa Cruz to Puerto Suárez bus dumped us off at some distance from the actual Brazilian border so I had to take a taxi to the frontier. There I exchanged some money and assumed that I would find an ATM where I would get a better rate when I arrived at the bus terminal in Corundú. We had to wait nearly two hours to get through the process of departing Bolivia so the country that was the most difficult to get into was also the most difficult to leave. After finishing at the Bolivian border I rolled my bag about 200 meters to the Brazilian side of the border. I showed them my multi-entry visa that I had so much trouble getting when I worked with Doug Daly from the New York Botanical Garden in Acre Department in 2001. It appeared to still be valid so they asked me no more questions. Near the Brazilian passport office there were taxis waiting to haul people to Corundú. I waited for a Brazilian couple from Bello Horizonte that I had met in the waiting line who were also going to Corundú so that we could share the cost of the car to the city. I was dropped off at the bus station.

In Corundú I had to wait for two hours for the next bus to Campo Grande, a major city in the State of Mato Grosso Sur. The bus ride from Corundú to Campo Grande was six hours, and we arrived there

just before dark. The route, BR-262, was relatively flat, beginning at just 85 m in Corundú and gradually rising to 500 m in Campo Grande. Much of the distance was covered with man-made savanna with lots of cow pastures but also occasionally some steep forested hills. By the time we got halfway to Campo Grande the sun came out, and it nicely illuminated the steep-sided mesas in the near distance. We did not closely approach the mountains but the road instead went between them. It continued to be green all the way to Campo Grande, and we eventually came into areas of more extensive ranching. Some of the pastures were immense in size, with hundreds of identical white Brahma cattle in every pasture. Earlier in the day they had been laying under trees but now near dusk they were all grazing.

By about 8:00 PM we rolled into the terminal in Campo Grande, a city of about 850,000 with a big modern terminal. I was certain that I would find a workable ATM but even with help I could find none which worked. Now I worried that I was going to be stuck there because the bus tickets were all more than my existing Brazilian cash. Fortunately, someone suggested that even if the machines did not accept my debit card I could use it to purchase my ticket. Since I had no place to stay or money to pay for a hotel, I decided to take another overnight bus, now the fourth in a row, to Rio de Janeiro. The bus was very nice and only about half filled with people. About 3:00 AM we crossed from the State of Mato Grosso Sur into the State of São Paulo, after crossing over the broad Rio Paraná at Presidente Epitacio. We then passed through two more towns named after Presidents, Pres. Veceslau and Pres. Prudente. The route was called the Rodovia Raposo-Tavaras but so far as I know we did not pass through towns with either name. By daylight on **Monday, 30 November** we were between Assis and Salto Grande and there were expansive views of extensive and beautiful ranches and massive farms. We passed through



Lucia Lomann

rolling country. The soil was blacker, not so lateritic and red as the soil in Mato Grosso do Sul the day before. There were also many more small towns, some of them showing great signs of prosperity with many farm implement

dealers. The towns became closer and closer together until finally we reached suburbs of São Paulo, easily the largest city in the Latin America with almost three million more inhabitants than Mexico City and 3.5 million more than New York City. The city is rather chaotic, but I was able to get a taxi to the **Universidade de São Paulo (SPB)** before rush hour started. Although I had only the address of the Biology Department which proved to be a couple of blocks away from the herbarium, I made it there with my heavy bag with little problem. I set to work at once and was later greeted by my old friend, Lucia Lomann who had gotten her Ph.D at Washington University. Lucia thought that I might continue to have problems finding money so she loaned me 350 reals and said I could just replace it in her St. Louis Commerce Bank account. What a relief!

With the internet I looked at hotels nearby and found one for only 21 dollars per night. I went ahead and booked it since I did not think the quality mattered much. A botanist from the herbarium, Alexandre Zuntini, who works on Bignoniaceae at the herbarium of the Universidad de São Paulo and had previously spent a year working at the Missouri Botanical Garden, drove me from the herbarium to my hotel and we both noticed that the place looked like it was a puteria (a place where men bring their clandestine girlfriends) because there was no front door at all and the customers drove in from the street. Still, it was not exclusively for that purpose and they were seemingly pleased to see me as a customer. My room was one of the nicest I had been in on my trip and they had an elevator. Typically the clandestine clients just make arrangements for a room by telephone, drive in, and then take an elevator to an open room. There are even little boxes in the wall to allow you to pay without being seen. I rather like staying in the puterias because they are always well equipped and usually you can drive straight into the room, which is convenient if you have lots of bags of plants. Once in Mexico I arrived late at night and was told I could stay but only if I was going to be able to leave by 7:00 AM. Apparently most are finished with their escapades by then, and the management simply closes down and goes home. The down side is that the television is solid porn and there are strange sex machines scattered about. Still, there is nothing like low down and close to the road when it comes to hauling lots of stuff into and out of your vehicle.

Sometimes these puterias offer you towels in the parking lot and want to know how many hours you are staying, usually surprised if you say you are planning to stay all night. In any event this puteria was quite nice and they were decorated for Christmas with an ornamented conifer in the lobby near the elevator.

I went to a nearby shopping center for some groceries but found only fancy gift stores, none of the basics like bread, meat, or rum, so I stopped on the way back at a little shop that was selling sandwiches and another that was selling fruit. They had marvelous crisp apples the likes of which I had never seen before, and they were very cheap so I bought a half dozen.

The next morning *Tuesday, 1 December* I arrived late at the herbarium despite the fact that I had intended to arrive at the earliest hour, since I had missed a second time change while I crossed Brazil. There had been a time change in the middle of the night journey which I did not know about.



Alexandre Zuntini

The **herbarium at the Universidad San Pablo-CEU (USP)** was exceptionally nice and

modern with compactors and excellent work spaces. It is located on the ground floor and is surrounded by large pools with aquatic plants so the research area is quite attractive. I managed to finish my work at USP about 1:00 PM and decide to go to the **Instituto de Botânica São Paulo (SP)** despite the fact that it was in the far south of the city. Following instructions from Alexandre, I embarked on what proved to be a very confusing and long journey that ended with me arriving at the monocot herbarium after 4:30 PM. Fortunately it was open until midnight. They have built a new air-conditioned building with compactors and have the monocots already established there and plan to eventually have the entire herbarium located in this building. They have an enormous staff and work on many groups of plants including all of the lower orders.

Because I was able to work late at the herbarium I succeeded in getting through the entire collection, although avoiding common species which I figured were already well determined. The Curator said that I was only to call her when I was finished and she would come to get me and take me to the metro station. Talk about service!

Since I managed to complete the two large São Paulo herbaria in a single day and was unable to visit the collection at the National Herbarium in Campinas due to some reshuffling of the specimens, I was then free to head north to Rio de Janeiro the following day. The next morning *Wednesday, 2 December* I took a taxi to the bus terminal, but ended up at a different bus terminal than the one I wanted. The central bus terminal for the largest city in the new world, which would have had hundreds of companies and buses to virtually everywhere in Brazil and perhaps also to Argentina, Peru and Paraguay. I really wanted to see it as it is bound to be impressive. This was clearly an auxiliary bus terminal – smaller, and farther away. Still, it had buses to Rio, so it worked out fine.

I took a bus that left at 8:36 AM so the timing was fine if I had not lost so much time getting there. The bus was slow and at one point stopped for 45 minutes in a shopping center for a health fair. It took until 3:00 PM to get to Rio. The road was excellent but often, especially on leaving Sao Paulo, the traffic was slowed to a crawl. The buses in Brazil move at relatively slow speeds, not like the lawless racing buses that I am accustomed to in the Andes of western South America. The roads are excellent and could certainly sustain vehicular traffic at higher speeds.

The botanical gardens in Rio de Janeiro is located near a large lake, Lagoa Rodrigo de Freitas, west of Copacabana Beach and along the edge of the mountains southeast of the Corcovado Mountain, but I had no idea where we were when the bus dropped me off in a small bus terminal. I contacted a taxi driver who turned out to be a rather wild-eyed driver and immediately started racing for the **Jardim Botânico do Rio de Janeiro (RB)**. The trip took an hour as traffic was bad. He kept falling asleep at the traffic lights and during the long pauses in the traffic jams and I had to wake him up. In between his naps

he was a violent driver, racing ahead at every opportunity (of which there are few in Rio).

The guard let me through the gate and I got to the herbarium about 4:00 PM only to find that Marcus Nadruz had already left. I was mostly concerned with finding a place to stay since it was already late in the day. The Curator Rafaela Campostrini Forzza (isn't that a cool name) found that Marcus had already made reservations for me in the Garden's apartment. Marcus later came back to the herbarium and drove me to the apartment which is located on the far side

of the Garden opposite the herbarium.



Rafaela Campostrini Forzza

At the Rio Botanical Garden 54 hectares (over 100 acres) are open to the public and a nearly equal area are in heavily controlled reserve. It was founded

in the era of Emperor Don Pedro making it the oldest botanical garden in the western hemisphere, now 207 years old. The herbarium at the garden is marvelous, all compactorized, but it is heavily refrigerated to prevent insects and much too cold for me. I had to wear my hooded sweatshirt, my coat and my corduroy sports jacket to be able to stay in there all day.

The Guest House for visitors is wonderful with lots of space, a huge living room and a nice kitchen with ice. I think that was the first time I had ice available for me on my entire trip so it was real luxury. The Guest House is only one of many buildings in that area of the garden. They own a whole neighborhood of houses and many of the gardening staff live there too. Right nearby there is a police station and a busy shopping area with a grocery store and many restaurants so it is very convenient.

Rio is easily the most beautiful city in the world despite being crowded and full of traffic. As you drive along from one part of the city to another you actually pass under huge granite mountains which are scattered all over the place, only to emerge on the other side with walls of vegetation along the roads. Some of these piles of rock have virgin forest

because they are so steep no one can climb them and most hills have endemic species on them. The Tijuca National Forest is right in the city. From the mountain splendors you drive only a short distance before reaching fabulous beaches, like Copacabana.

Rio de Janeiro is built along the edge of the Atlantic Ocean but the huge and deep Guanabara Bay with its large Governador Island juts inward north and east of downtown Rio and is now completely surrounded by the city or its suburbs. The first explorers thought the narrow opening into the Atlantic was a river and having arrived in January they called the place River of January (Rio de Janeiro). There is a broad and spectacular sandy beach that is popular even in the colder months of July and August as well as mountains that rise up sharply in the near background. Surely there is no comparable place on earth.

I first visited in July, 1962, during Brazil's winter, and there were people crowded on the beach, even though the air was not so warm. They were probably drinking some rum to ward off the cold. You can see why they are always dancing and singing!

I once drove up onto one of these mountains with a young Brazilian student who arrived to pick me up at my hotel in some kind of strange sports car that actually had no roof or side windows. You had to crawl over the top of the door to get into the seat. She was interested in Araceae and had done a study of the Araceae of one of these large peaks. We went on a collecting trip in this car.

One time when I was in Rio I was invited to a party at the residence of the famous painter Margaret Mee. She was an unusual artist in that she actually went into the jungle to paint real plants. She was very familiar with the botanists at Kew, including my good friend Simon Mayo. I had met her when she visited the Missouri Botanical Garden for an exhibition of her artwork. I was given a piece of her artwork, a beautiful painting of a *Philodendron* upon reaching my 25th year at the Missouri Botanical Garden, and I am very proud of it. Once when I was in Rio for a herbarium visit, she found out I was there and invited me to a party. Margaret sent me her

address and I spent most of the afternoon driving around Rio de Janeiro trying to find her house with a big map I bought. Her house was perched up on the top of one of those frequent mountains in the city. I finally arrived at her residence before dark and in time for the party after hours of driving. However, late that night about midnight, I suddenly realized that I needed to get back to my hotel and with all the trouble I had finding her house the task of getting back half-soused seemed overwhelming. I asked her husband about directions and fortunately for me the tram tracks that passed in front of their house went directly back to Hotel Italia where I was staying.

My time at the herbarium in Rio was very productive **Thursday, 3 December**. They have one of the largest collections of Araceae in all of South America: nearly two full compactor aisles filled with specimens. Many of the species are in *Anthurium* section *Urospadix*, a group with which I have little familiarity and one which contained many new species since I was last there more than ten years ago, so I had to take a lot of pictures. They probably also have the world's largest collection of undetermined *Philodendron* species. I found several new species and took the time to describe them as well. In addition Marcus Nadruz has a significant collection of living plants at the garden growing in the



Marcus Nadruz

garden growing in the National School of Tropical Botany, formerly called the Empress's Solar. It was a real treat to get to see and study those collections. His collection is located up the road toward the Tijuca Mountain and the Vista Chinesa. The place where the collection is housed is simply called Horto, and it is where the wife of the Emperor Don Pedro had her own residence. It is above the city in a secluded moist and cool valley, perfect for growing plants. Marcus has growers there who tend his plants and he goes up each Friday to work with the collections.

Many of the *Philodendron* collections at the JB herbarium are specimens made from living collections either in the garden itself or from the

collection of Roberto Burle-Marx, a famous landscape designer and plantsman who sponsored many expeditions throughout Brazil to collect plants. He brought them all back to his big estate south of Rio at Barra de Guaratiba, where he had a large property called Sitio Burle-Marx. There he built growing areas with massive concrete columns: one for each species he hoped to cultivate. The plants thrived there and still exist today, but unfortunately when they were introduced they did not have proper materials for tagging and most of the wooden stakes that contained the original numbers rotted away.

In 1982 I spent a week at the compound living in Roberto's house while I worked on the collection, making herbarium specimens with detailed notes. Roberto was an interesting guy to say the least. An artist and a polymath, he courted the famous and erudite of the area and each weekend he had a party at his big estate, usually on Sunday when many of the socialites of the Rio area would come to enjoy the afternoon. On Saturday Roberto would lay out large expanses of white cloth, then with a flourish of swatches he would waft brushes at the board, making big sweeps to create a bizarre array of colors in great movements. To me it looked like a child playing with a stick but the end result of his throwing paint from a number of open buckets was often stunning. When he finished he stood back for a final appraisal then hung them up to dry in the sun. This same Saturday morning effort was often sold for thousands of dollars. Clearly the guy had a good thing going. He loved to sing opera and on Sunday, with the accompaniment of a small band, he sang to amuse the crowd.

After the guests had arrived the booze started flowing and did not stop till everyone left. Roberto liked scotch whiskey and his dining room was lined with cases of scotch. I don't know why he stowed the cases here, whether he had a storage problem or if he just liked to know that the supply was ample. Each night we had dinner with lots of Scotch whisky while the dinner was catered by his kitchen help. We discussed plants, politics, art, geography and a myriad subjects. He spoke many languages fluently and seemed to know a lot about any subject. He was highly regarded in Brazil. It was said that when he arrived from a foreign trip

he was escorted through customs with no difficulty (and he was usually carrying plants).

*Roberto was commissioned by the Brazilian government, at the time positioned in Rio de Janeiro, to design the landscaping for the new capitol in Brasilia, when it was just a spot on the map in the middle of the cerrado vegetation. It was located some hours north of Belo Horizonte, the old summer capital of Emperor Don Pedro. Brasilia was intended to make the capital of the country more centralized. I went there when I was traveling around South America in 1963. I was told that it was to be the new capital of this big country and that it was to be exciting and modern. When I arrived most of the main government buildings were at least partially constructed or under construction. It resembled a subdivision a few months before they started trying to sell the houses. Basically the entire city was just a construction zone. Roberto had not yet had an opportunity to work his magic on the landscaping environment. Part of the reason that Roberto made all of his collecting trips was to find interesting plant materials that would work well in local environments and which would survive under the conditions that are present. His personal collection at his property was diverse with a wide array of subject matter. I remembered seeing lots of *Velloziaceae*, a family common to Brazil, as well as *Bromeliaceae*, *Orchidaceae*, *Commelinaceae* and other ornament families. Roberto eventually gave his entire estate to the government and it is now under the care of competent managers who are still trying to get names for the many collections he made.*

On the evening of **Friday, 4 December**, my last day at the herbarium, I ventured back to the guest quarters without Marcus as a guide, and quickly realized I had not remembered some key turns. I decided to walk along the border of the garden even if it meant a longer trip since I knew that the guesthouse was along the edge of the garden. As I got near to the edge of the grounds, even though I recognized nothing, the guards seemed to know precisely who I was and continued to direct me forward. Finally one said "Go straight ahead and at the 3rd door you will be at your house". He was off

by one door but even I recognized the door and the police station that lie beyond my door.

On **Saturday, 5 December**, I left on a flight to Venezuela, my last leg of this long journey. Rio de Janeiro had been a wonderful interlude in my long trek to study Araceae in South America.

The drive from the botanical garden to the airport took an unexpected course. We passed under Corcovado and the brightly illuminated Cristo was easily within view. I expected the driver to go along the beach front as previous trips to the airport had used that route, but he suddenly took a left not far from the Jardín Botánico and darted through a tunnel under one of the many mountains, then got onto an autopista which made a trajectory behind the section of town bordering the beach and straight along the margin of the bay toward the airport. As we approached the airport the sun was just rising on the opposite side of Guanabara Bay. On our departure a couple of hours later we had wonderful views of the bay and downtown Rio and then of the undulating terrain between Rio and Sao Paul.

After changing planes in Sao Paulo we flew for over six hours north to Caracas, near the northernmost edge of South America. It was a boring flight, too high to see the ground, no movies, and tightly packed.

When we got to Caracas I was told that I did not have a visa, which I already knew. I just assumed that since the airlines said nothing about the need for a visa that they would charge me for a visa when I arrived in Venezuela just as they had done in Bolivia. Instead they said that I had to return to Brazil in order to get a visa outside of Venezuela. I spent about an hour in one of the offices of the Federal police filled with a lot of Chavez propaganda. I was hoping that they would eventually sell me a visa but they were just making out paperwork to give to my air carrier TAM to demand that they haul me back to Brazil. Since TAM had not realized that I needed a visa and had brought me into Venezuela they were considered at fault and they had to fly me back to Brazil.

So I boarded a plane for the same long flight back to Sao Paulo about 8:00 PM and arrived there about 2:30 AM **Sunday, 6 December**. I had been worrying about getting my Venezuelan visa, wondering how I

could possibly get the Brazilian currency (reals) and where I would stay that night, as well as how I to find a Venezuelan embassy or consulate. However all of these thoughts were soon abandoned with other more urgent problems. When I had first entered Brazil on the Bolivian border I showed the authorities a visa from 2002 that I received when I was working in Acre and assumed was both still-valid and multi-entry. The Brazilian authorities on the Bolivian border accepted it as valid, and I had no doubt that I had entered the country legally, so I was shocked when they told me that the visa I had was expired and useless. They said that the only way one can legally get a Brazilian visa was from an embassy or consulate outside Brazil and that the only solution for me to get one was to fly to some other country that would allow me to enter in without a visa, perhaps to Paraguay, in order obtain an official Brazilian visa before returning to Sao Paulo. Since I was not really interested in staying in Brazil that made no sense. What I really wanted was a Venezuelan visa but Brazil would not let me leave the airport since I was there illegally. Initially I talked with at least ten different people, Brazilian border police mainly, but they seemed incapable of deciding what to do. Finally, a young man from TAM Airlines showed up and took me away from the gate area, through the security checkpoint and finally to a big darkened room and told me to stay there.

In the same room there was a young man asleep on the benches when I arrived and I too laid down and tried to sleep. In the morning I talked with him. He was Owusu Achcampong from the town of Kumasi in the West African country of Ghana. He said that he had been there for four days, and that he was a laborer on a farm owned by his brother. He said that Ghana was almost exclusively Christian and that Boca Haram was not a problem there but the economy was terrible and there were few jobs. Those few were mostly occasional day jobs as a laborer at very poor pay with no benefits. He was obviously trying to sneak into Brazil using a technique that Africans and others have worked out whereby they get a Brazilian visa to transit Brazil on their way to Ecuador which does not require a visa. However, they purchase a ticket only to Brazil and have only a reservation for a flight to Quito. When they get to Brazil they are effectively in transit and they are perfectly legal as long as they remain in the terminal.

OPUS Herbarium tour of South America, 18 October-7 December, 2015

However the idea is to get past the immigration authorities and disappear into the populace. This man got caught when he was trying to get into a taxi and was noticed by a policeman who asked him for his papers. Owusu told me that many of the Africans who came to Brazil from Ghana for the World Cup in Rio overstayed their visas and disappeared. He spoke a language called Fee and only a smattering of English despite the fact that Ghana was previously an English territory. This poor kid, an obvious economic immigrant, managed to scrape together \$4000 to try to sneak away from Ghana and now most of the money is lost. He was telling me how he had managed to get past several immigration people with his landing card and his partial ticket (one paid up onto Brazil but not to Ecuador where he was ostensibly traveling). Although he had a legitimate Brazilian transit visa he could not provide a ticket to Ecuador and was assumed to be planning to stay in Brazil. So they captured him and held him for departure on Moroccan Airlines the following Tuesday (they have only a weekly flight to Brazil). His original story to me was that he had a friend in Ecuador who sent him the ticket but he eventually explained the ruse. So the guy from Ghana was in much worse shape than me even though we were both under guard in the same facility.

The place where we were incarcerated had no wifi so I could not even communicate with the outside world (not that it would have done a lot of good anyway). No one knew where I was, and I did not know how to deal with the problem. They occasionally would bring something to eat. The guy from Ghana said that they fed him meals three times a day. We had both had to sign a document saying that we would not leave the room, and there were people sitting at a desk outside the door who would presumably have impeded our departure. I had no idea where my luggage was and apparently neither did the airline. Since I could not get through immigration to go pick up my luggage, I did not know if it came with me on the plane from Caracas. I never got a chance to see it in Caracas, but I am assuming that it was unloaded there. I kept asking about it in Venezuela even as I was reboarding the TAM flight for Sao Paulo. The agent in Caracas said that my checked luggage would stay there in Caracas and that they could not take it back to Sao Paulo because the plane was closed; I had gotten a seat assignment just at the last minute.

The big bag had my toiletries, most of my reading material and even my computer power cord so I had only limited ability to work on my computer.

About 11:30 AM a man showed up from TAM and talked to me about my problem. He said that the only practical thing to do was to buy a ticket back to the States which I legally could do. The only problem was that I had already paid for a ticket from Caracas to St. Louis on December 15th and I was hoping to somehow get to Caracas again so I would not lose the ticket I already had.

Obviously spending more time as a prisoner in the Sao Paulo Airport, unable to get to my belongings, did not appeal to me. He said that my big bag was actually there in Sao Paulo in storage but that it was in a part of the airport that I could not legally go to, and that he could not bring the bag to me. He left and did not come back.

In the early afternoon two young women arrived and asked me more questions. I thought they were planning to try to find me passage back to the US. They asked me where I needed to fly to and I had to give them my driver's license. So at that point I had no passport or license and no idea what was going to happen to me. Apparently my plan to go to the Venezuelan embassy the following morning get a visa for Venezuela and then return to Venezuela was foiled by my illegality in Brazil which I had not anticipated. It is pity that was unable to go to Venezuela since I had not worked there for years and would have been able to determine a lot of collections. All in all it had been much easier to travel by bus, which I did for thousands of kilometers with no problem, then the first time I tried to fly I ended up in serious difficulty.

In midafternoon a woman from the TAM office showed up and offered to let me use a TAM phone to call home. Fortunately my wife Pat answered the phone and she was able to look up the details of the ticket she had purchased for me that had me scheduled to depart Caracas on 15 December. Pat sent this ticketing information to the TAM representatives by email. I was hoping that the TAM people could patch together some connections from Sao Paulo to Caracas, while at the same time moving up my departure from Caracas, thus enabling me to

escape my “airport jail” and fly straight back to St. Louis from Sao Paulo. Indeed, we later found out that TAM had done so but they had not told me so I missed the flight. Since they didn’t tell me, I lost my ticket all together. It was very late in the day on Sunday when I went with another TAM employee to the VIP lounge where we together looked for and purchased a one way ticket from Sao Paulo to St. Louis. By this time it was very expensive, costing nearly \$1,000, but I had no choice. I did not want to sit around endlessly for days without a bed and under constant surveillance by the transit police with no change of clothes or a way to get clean.

The wifi was not working correctly in the holding room so the only way I could communicate with the outside world was through the TAM people. After I got back home I found out that TAM at one point modified the date on my departure ticket but for some reason in the end they just abandoned that ticket and said that we needed to buy one that went directly from Sao Paulo to the US and then home to St. Louis. I do not do well sitting around twiddling my thumbs and was getting dangerously low on reading material. Even the main lobby of the airport had nothing like the equivalent of our airports where CNN blares out with vapid news stories. Eventually my computer ran out of juice with access to the charger, as did my little device with recorded music. By the time this happened they had moved me to the main lobby and were guarding me there.

Since I had ten hours overnight to wait in the noisy lobby with no surfaces to sleep on, after purchasing my expensive ticket and having a meal I asked my guard if we could go back down to the “jail” where I had spent part of the previous night and all of the morning. At least it was much quieter there and we could turn off the lights. That’s when I was very surprised to learn that they had actually managed to book me on a flight departing at 10:00 PM that same night! The young lady who had my passport and my boarding cards and did not show up until 15 minutes before departure time, making me very uncomfortable, then continued to hold onto my passport and the boarding cards even though the departure gates kept changing and people rushed from gate to gate. I finally found her and demanded to have them. She may have meant well but I could not trust that she would be present at the moment I needed to board. At some point about then the last of the guards assigned to me left. I guess they were convinced at this point that I was not going rush out on the street and try to get a job as a day laborer. It must have been a boring job to sit and watch me.

Finally, nearly an hour after our scheduled departure time, we took off from Sao Paulo. I arrived in Miami at 6:20 AM on **Monday, 6 December** and it was still dark. I quickly went to immigration and entered my details into the machine. Then I went to baggage claim, went through the long process of finding my bag, failing to find it, and filling out the lost form.

I regret that I was not able get to go see the Venezuelan herbaria. I hope I may have enough money left over to swing over to Venezuela when I am doing Central American herbaria next summer but I will try to get a Venezuelan visa first.

Despite having visited 25 herbaria during this trip, I did not go to many others because I had visited many of the herbaria in Colombia and Ecuador in the past few years (in some cases several times), and I avoided revisiting them to enable me to have time to visit herbaria not previously seen or not visited in recent years. Colombian herbaria not visited on this present trip are:

- HUAZ (Universidad de Amazonia in Florencia curated by Marco Correa) has a very good collection of Araceae from Caquetá Department, owing primarily to the efforts of my colleague Edwin Trujillo Trujillo who is a specialist in Araceae.
- CAUP (Universidad del Cauca in Popayan curated by Bernardo Ramírez (General Curator) and Diego Macias) Bernardo for many years worked at the Universidad del Nariño where many of his collections are deposited. The CAUP herbarium has an excellent collection of Araceae with many new species and

OPUS Herbarium tour of South America, 18 October-7 December, 2015

a very high percentage of the total undescribed material, surely more so than most herbaria in the country. Macias especially has been successful in getting collections from the western slopes of the Andes in Cauca Department.

- CUVC (Universidad del Valle in Cali curated until recently by Philip Silverstone-Sopkin) has the second or third best collection of Araceae in Colombia, with special emphasis on Valle Department and with many collections from the super-rich areas of Queremal-Anchicaya, the Bajo Calima Region, and Cerro Tora and its associated mountains (the result of expeditions led by Silverstone-Sopkin). Silverstone-Sopkin has also specialized in collections from remnant forests in the valley of the Río Cauca. The CUVC herbarium has an outstanding collection of Araceae owing to its proximity to some of the richest forests in Colombia as well as the strong degree of collaboration with foreign botanist over many years by Silverstone-Sopkin.
- FAUC (Universidad de Caldas in Manizales, curated by Luis Miguel Alvarez Mejia) has a good aroid collection especially from Caldas and Quindio Departments. Especially notable are collections from Natalia Castaño-Rubiano and Julio Andres Sierra, both of whom are Colombian specialists with Araceae.
- FMB (Instituto Alexander von Humboldt, in Villa de Leiva curated by Claudia Media, has one of the best collections of Araceae in the country since this institution was once the mandatory deposit for all collections obtained with permits issued by INDERENA. It has also had good plant collectors associated with the herbarium, most notably William Vargas and currently employs Humberto Mendoza.
- HUQ (Universidad de Quindio in Armenia, curated C. Alberto Agudelo H. has a modest collection of Araceae, mostly from the Department of Quindio with a large percentage of the total represented by new species.
- LLANOS (Universidad de la Amazonia, in Villavicencio, curated by Stella Suarez) has a small collection of Araceae, perhaps owing to its location near the edge of the llanos where there are few collections.
- MEDEL (Universidad Nacional de Colombia-Sede Medellín, curated by Mario Suarez) has the third best collection of Araceae in Medellín and possesses a very good collection with many old collections and many new species.
- PSO (Universidad de Nariño in Pasto, curated by Aida Baca) has a large collection of mostly undescribed Araceae, in large part from Nariño Department, particularly the Reserva La Planada. Especially important are collections by Bernardo Ramírez, Olga de Benevides, Al Gentry, Tom Croat, Hans Bitner, and Gerardo Herrera.
- TOLI (Universidad del Tolima in Ibagué, curated by Héctor E. Esquivel) has a moderately small collection of Araceae mostly from Tolima Department. Important aroid collections are those of Croat and those of German Oyuela, Director of the Jardín Botánico San Jorge. The department has enormous elevational range and has many areas which are remote and poorly collected so the potential for a rich flora is high.

Ecuador, where I have principally worked in the past decade, has some very fine herbaria. I had visited all of them in the past few years so on this trip I did not include them, in part because I had run behind schedule and was unable to work there for two days when I first arrived.

- QPLS (Jesuit monastery in Cotacallao) The most important of the Ecuadorian herbarium for Araceae, this is where most of the Luis Soidiro collections are housed. Though the herbarium is not the largest in terms of numbers of specimens or even in terms of the most number of species, the herbarium is certainly important for its rich collection of type specimens and for rare species. Most of the approximately 250 species described by Soidiro are housed there and most represent type specimens as well as the only known collection of many species. The herbarium is under the authority of Father Julian

Bravo but has no formal herbarium Curator. However it is in part managed by retired botanist F. M. Valverde who used to work for the Universidad Central in Quito.

- QCNE (the Herbario Nacional de Ecuador is curated by Marcia Peñafiel, Diana Fernández and Efraín Friere) has the largest and most geographically diverse collection of Araceae in Ecuador with high percentages of the collections being new to science.

Other collections in Ecuador include three additional herbaria in Quito:

- QCA (Pontificia Universidad Católica del Ecuador curated by Katya Romoleroux and Hugo Navarrete) is the second best herbarium in Ecuador for Araceae with special concentration in the Amazon basin owing to their large field station in the Yasuní National Park. It has an excellent and well curated herbarium.
- Q (Universidad Central, curated by Consuelo Montalve), has a moderately small herbarium but one which is important from the standpoint of Araceae because it has a lot of Sodiro specimens.
- QAP (curated by Carlos Cerón and located at the Universidad Central in the Department of Pharmacology) is essentially the personal herbarium of Carlos Cerón who collected virtually all of the specimens and paid for most of the costs of the labeling and mounting of collections. The herbarium has one of the best collections of Araceae in Ecuador, diverse both in terms of geographic dispersal and species richness because of Cerón's special interest in Araceae and his willingness to collect in such diverse areas with difficult access. Many of the collections represent undescribed species. Currently there is a plan to unite the QAP herbarium with the Q herbarium and create a new space for both collections. If this happens it will be a much better situation for purposes of research.

Other herbaria elsewhere in Ecuador are mostly regional:

- HA (Universidad del Azuay, curated by Raffaella Ansaloni) has a small aroid collection, mostly from Loja and Azuay Provinces. A high percentage of the species are new to science.
- LOJA (Universidad Nacional de Loja in Loja, curated Wilson Quishpe) has a significant collection of Araceae especially from Loja Province but also from recent collections by Wilson Quishpe and others made in Zamora-Chinchipe Province in the Cordillera del Cóndor. Many of the collections are still undetermined.
- ECUAMZ (Universidad Estatal de Amazonia in Puyo, curated by David Neill) is a new herbarium in a recently built university campus, in Pastaza Department. The herbarium is located on the agricultural campus located in Napo Department near Santa Clara. Although its holdings are still small, it already has significant Araceae collections owing to all of the Croat collections made on a National Geographic sponsored collecting trip during 2015 when collections were made during January and February as well as in August and September.
- GUAY (Universidad de Guayaquil, curated by Carmen Bonifaz) has a moderately large herbarium which is probably less regional than some of the others mentioned above especially owing to the collections of Xavier Cornejo and Carmen Bonifaz made mostly on the Pacific slope of Ecuador.
- GUAYA There is also a small herbarium located at the Jardín Botánico de Guayaquil curated by James Pérez who has made most of the collections and which has significant numbers of collections of Araceae largely by Pérez himself, and with many of the same collections are in cultivation at the botanical garden.

Several major collections were missed in Peru, among them:

- AMAZ (Universidad Nacional de la Amazonía in Iquitos, curated by Richard Huanaca) has a significant collection of Araceae, especially those made by Rodolfo Vásquez during his collecting for

his major publication, "The Flora of the Iquitos Region." I last visited this herbarium some years ago but it was expensive to get to for this trip.

- CPUN (Universidad Nacional de Cajamarca, curated by Isidoro Sanchez Vega) has a relatively small collection but with a high percentage of its collections being undetermined and mostly new collections.

Several other Peruvian herbaria exist but they occur in regions with little or no Araceae. Also missed were the previously visited MOL (Universidad Nacional Agraria La Molina, curated by Mercedes Flores), which had a small aroid collection but with a significant number of undescribed species. Its collection is similar to USM but with many fewer specimens.

Several herbaria from dry habitats that we not expected to have Araceae, mainly HCEN (Universidad Nacional del Centro del Peru in Huanuco); HUSA (Universidad Nacional de San Augustin de Arequipa) and AQP, Estudios Fitogeográficos del Peru, also located in Arequipa on the desert-like western slopes of the Western Andes.

The total trip costs were \$5,349.19, but if I could have eliminated the costs of the unnecessary costs for the tickets to Venezuela and the ticket from Caracas back to St. Louis (owing to my failure to get a visa for Venezuela and Brazil ahead of time) it would have reduced the trip cost to \$2,149, quite a bargain for the amount of work I got completed. I will attach a link to the bus itinerary for anyone interested in knowing more about the specific travel costs and a map so that you can see route taken. This trip was essentially a counterclockwise trip around the South American continent (or it would have been had I been able to visit Venezuela) whereas my 1962 trip began in eastern Brazil, traversed the Amazon region, then covered the desert coast of Peru, the highlands of Peru, Bolivia and Argentina, crossed Paraguay and southern Brazil, led north to Brazilian, then back along the coast of Brazil and Uruguay to Buenos Aires, crossed the Pampas, the western Andes into Chile and then north through the Chilean and Peruvian deserts into the Andes of Ecuador and Colombia then extended east to the Cordillera Oriental in Colombia, across the paramos to western Venezuela and north to the Cordillera de los Andes in Venezuela. From there I flew to Panama and took buses back through Central America to Laredo, Texas. Though that trip to South America did not take me further south than 34 degrees south (which would be like being in Hot Springs, Arkansas in the northern hemisphere), my wife and I later took a trip from Santiago, Chile all the way down to Tierra del Fuego (which is at about 55 degrees south), passing through Patagonia on the way. So I eventually got to see the southern third of the continent too. Curiously 55 degrees north will not get you even to the middle of Hudson Bay and still south of Alaska!

I hope that this description of my extensive herbarium tour of South America will encourage others to visit herbaria in Latin America. This example shows that it is relatively easy and inexpensive to make the rounds to different institutions. The trip enabled me to meet many Curators, discover hundreds of new species, photograph and record new species and new range records, arrange for many loans and to seek and acquire several new researchers.

Postscript: My lost bag was found in Caracas on Monday afternoon and was shipped to my home, arriving one week after my own arrival. My rum was removed for "security" reasons but my salami and cheese made it back and was still quite tasty!

South America Tour Dates, Locations and Transportation Information

Note: Distances are representative

Date	Locations	km	Cost	Unit	Bus Company
<i>Saturday, Oct 17</i>	St Louis - Miami * to Bogotá, Colombia *	4150			
<i>Sunday, Oct 18</i>	Bogotá, Colombia				
<i>Monday, Oct 19</i>	Bogotá, Colombia				
<i>Tuesday, Oct 20</i>	Bogotá, Colombia				
<i>Wednesday, Oct 21</i>	Bogotá, Colombia				
<i>Thursday, Oct 22</i>	Bogotá, Colombia to Tunja, Colombia	141	20,000	Pesos	Cootransbol
<i>Friday, Oct 23</i>	Tunja, Colombia to Bucaramanga, Colombia	283	40,000	Pesos	Berlinas
<i>Saturday, Oct 24</i>	Bucaramanga, Colombia to Pamplona, Colombia	119	25,000	Pesos	Copetran
<i>Sunday, Oct 25</i>	Pamplona, Colombia to Cucuta, Colombia	76	15,000	Pesos	Cotranal
<i>Monday, Oct 26</i>	Cucuta, Colombia to Valledupar, Colombia	549	70,000	Pesos	Copetran
<i>Tuesday, Oct 27</i>	Valledupar, Colombia to Ríohacha, Colombia	193	25,000	Pesos	Copetran
<i>Wednesday, Oct 28</i>	Ríohacha, Colombia to Santa Marta, Colombia	172	20,000	Pesos	Expreso Brasilia
<i>Thursday, Oct 29</i>	Santa Marta, Colombia to Baranquilla, Colombia	104	16,000	Pesos	Berlinas
<i>Friday, Oct 30</i>	Baranquilla, Colombia to Cartagena	134	16,000	Pesos	Berlinastur
<i>Saturday, Oct 31</i>	Cartagena, Colombia to Bogota, Colombia	27	100,000	Pesos	
<i>Sunday, Nov 01</i>	Bogota, Colombia				
<i>Monday, Nov 02</i>	Bogota, Colombia				
<i>Tuesday, Nov 03</i>	Bogota, Colombia to Neiva, Colombia	1279	46,000	Pesos	Coomotor
<i>Wednesday, Nov 04</i>	Neiva, Colombia to Honda, Colombia	329	45,000	Pesos	Flotahuila
<i>Thursday, Nov 05</i>	Honda, Colombia to Medellín, Colombia		40,000	Pesos	Coomotor
<i>Friday, Nov 06</i>	Medellín, Colombia				
<i>Saturday, Nov 07</i>	Medellín, Colombia				
<i>Sunday, Nov 08</i>	Medellín, Colombia to Quibdo, Colombia	231	65,000	Pesos	Rapido Ochoa
<i>Monday, Nov 09</i>	Quibdo, Colombia				
<i>Tuesday, Nov 10</i>	Quibdo, Colombia to Medellín, Colombia	231	60,000	Pesos	Rapido Ochoa
<i>Wednesday, Nov 11</i>	Medellín, Colombia to Cali, Colombia	419	45,000	Pesos	Empresa Arauca
<i>Thursday, Nov 12</i>	Cali, Colombia to Tuluá, Colombia	92	10,500	Pesos	Tax Central
<i>Friday, Nov 13</i>	Tuluá, Colombia to Buga, Colombia	30	3,000	Pesos	Lineas del Valle
<i>Friday, Nov 13</i>	Buga, Colombia to Palmira, Colombia	54	5,000	Pesos	
<i>Friday, Nov 13</i>	Palmira, Colombia to Ipiales, Colombia	491	50,000	Pesos	Transipiales
<i>Friday, Nov 13</i>	Ipiales, Colombia to Tulcán, Ecuador	12	6	dollars	
<i>Friday, Nov 13</i>	Tulcán, Ecuador to Quito, Ecuador	241	6	dollars	
<i>Saturday, Nov 14</i>	Quito, Ecuador to Haquillas, Ecuador	605	14.25	dollars	Panamericana
<i>Saturday, Nov 14</i>	Haquillas, Ecuador to border of Ecuador	5	5	dollars	
<i>Sunday, Nov 15</i>	border of Peru to Tumbes, Peru	25	15	dollars	
<i>Sunday, Nov 15</i>	Tumbes, Peru to Piura, Peru	287	25	Soles	
<i>Monday, Nov 16</i>	Piura, Peru to Lambayeque, Peru	207	40	Soles	Entrafesac

OPUS Herbarium tour of South America, 18 October-7 December, 2015

South America Tour Dates, Locations and Transportation Information, Continued

Note: Distances are representative

Date	Locations	km	Cost	Unit	Bus Company
Tuesday, Nov 17	Lambayeque, Peru to Trujillo, Peru	225	23	Soles	America
Wednesday, Nov 18	Trujillo, Peru to Lima, Peru	555	35	Soles	America
Thursday, Nov 19	Lima, Peru				
Friday, Nov 20	Lima, Peru to Oxapampa, Peru	408	60	Soles	Turismo Oxabuss
Saturday, Nov 21	Oxapampa, Peru to La Merced, Peru	77	20	Soles	
Saturday, Nov 21	La Merced, Peru to Huancayo, Peru	184	25	Soles	MGM
Saturday, Nov 21	Huancayo, Peru to Huancavelica, Peru	179	25	Soles	
Sunday, Nov 22	Huancavelica, Peru to Ayacucho, Peru	241	50	Soles	Expreso Molina Union
Sunday, Nov 22	Ayacucho, Peru to Andahuaylas, Peru	237	20	Soles	Expreso los Chankas
Sunday, Nov 22	Andahuaylas, Peru to Abancay, Peru	149	15	Soles	El Apurimeño
Sunday, Nov 22	Abancay, Peru to Cuzco, Peru	194	35	Soles	
Monday, Nov 23	Cuzco, Peru to Juliaca, Peru	344	55	Soles	Turismo Pachacutec
Tuesday, Nov 24	Juliaca terminal to terminal		3	Soles	
Tuesday, Nov 24	Juliaca, Peru to Puno, Peru	48	3.5	Soles	
Tuesday, Nov 24	Puno, Peru to Desaguadero, Peru	147	10	Soles	
Tuesday, Nov 24	Desaguadero, Peru to border of Peru	0.5	20	Soles	
Tuesday, Nov 24	border of Bolivia to La Paz, Bolivia	118	30	Bolivianos	
Wednesday, Nov 25	La Paz, Bolivia				
Thursday, Nov 26	La Paz terminal to LPB Herbarium		80	Bolivianos	
Friday, Nov 27	La Paz, Bolivia to Cochabamba, Bolivia	379	106	Bolivianos	Transportes El Dorado
Saturday, Nov 28	Cochabamba, Bolivia to Santa Cruz, Bolivia	475	100	Bolivianos	Flota Bolivar
Sunday, Nov 29	Santa Cruz, Bolivia to Puerto Suárez, Bolivia	638	100	Bolivianos	Pantanal
Sunday, Nov 29	Puerto Suárez, Bolivia to border of Bolivia	14	20	Bolivianos	
Sunday, Nov 29	border of Brazil to Corumba, Brazil	8	20	Reals	
Sunday, Nov 29	Corumba, Brazil to Campo Grande, Brazil	426	100.7	Reals	Transportes Andornha
Monday, Nov 30	Campo Grande, Brazil to São Paulo, Brazil	992	100.6	Reals	Transportes Andornha
Tuesday, Dec 01	São Paulo, Brazil				
Wednesday, Dec 02	São Paulo, Brazil to Rio de Janeiro, Brazil	434	294.8	Reals	
Thursday, Dec 03	Rio de Janeiro, Brazil				
Friday, Dec 04	Rio de Janeiro, Brazil				
Saturday, Dec 05	Rio de Janeiro, Brazil to São Paulo, Brazil	434	83.71	Reals	
Saturday, Dec 05	São Paulo, Brazil * to Caracas, Venezuela *	4398			
Sunday, Dec 06	Caracas, Venezuela * to São Paulo, Brazil *	4398			
Sunday, Dec 06	São Paulo, Brazil * to Miami, Florida *	2405			
Monday, Dec 07	Miami, Florida * to St. Louis, Missouri *	1695			

OPUS Herbarium tour of South America, 18 October-7 December, 2015

OPUS Herbarium Tour of European Herbaria

April, 2016

Thomas B. Croat, P. A. Schulze Curator of Botany
Missouri Botanical Garden

This was the second of three extensive herbarium tours. In contrast to Asian or African Institutions which largely house regional collections, many European herbaria have large numbers of important collections of Araceae. I embarked on the European trip on April 1st flying first to Italy. I had made a side trip on a weeklong visit to Israel and Jordan so I arrived in Italy via Athens. From Rome, I took a train north to Florence, a city which has some of the oldest and most important herbaria in Europe. I was mostly staying in hostels while in Europe because they were inexpensive and at this off-season time, I often was alone in a room with several beds.

❖ *Florence, Italy*



Florence Herbarium

I had arranged for a place to stay in Florence near the main station and was met by, **Lia Pignotti, Curator of the FT Herbarium.** Lia soon arrived on her bicycle and she walked me to the

herbarium about a kilometer away. I memorized the route and returned by the same path later that day. The route led by an old castle wall and through a big park then past a small community surrounding a local church. The FT Herbarium is the **Centro Studi Erbario Tropicale of the Department of Biology-University of Florence** with about 5 million, 230.000 collections. It was founded in 1904 in Rome by, Romualdo Pirota and later moved to Florence in 1914. The current Director of FT Herbarium is Prof. **Alessio Papini** (until 2021). **Riccardo M.**



Riccardo Baldini

Baldini, former Director (2012-2018) of the FT Herbarium and currently the editor of *Webbia*, is one of the foremost tropical botanists at the institution. A specialist in Gramineae, he has spent a lot of time working in Panama with Orlando O. Ortiz. Riccardo is also a member of the Management Committee of the FT Herbarium. There are many collections by other Venezuelan collectors, among them are, Father G. Bono, who donated ca. 18.000 collections, which were recently revised by, Otto Huber, a German botanist who spent much of his career in Venezuela. Another Italian botanist, Leon Croizat, spent much of his career in Venezuela as well, but was not so much a plant collector.



Chiara
Nepi

The main herbarium collection in Florence is the **FI Herbarium**, located in the **Natural History Museum** of the University of Florence at Via G. La Pira 4, Florence 1-

50121. The FI Herbarium (including the Webb Herbarium) has about 5.000.000 collections. It is curated by, **Chiara Nepi**. The FI Herbarium is the older institution, founded in 1842 by Filippo Parlatore and they have many aroid type specimens, especially from Africa and Asia. The FI Herbarium also has many Venezuelan aroids collected by botanist, Luciano Bernardi, a specialist on Lauraceae. Both herbaria, FT and FI, are located in a large, old building where the specimens are tied in bundles, which I observed elsewhere in Europe, to make them easier to get down from the herbarium shelves and cabinets that are stacked high on the walls. On Friday, a group of us went with Riccardo to one of his favorite restaurants in downtown Florence, “Il Fagioli”, for a big steak dinner where we said our farewells.

❖ *Munich, Germany*

I took off early the next morning for Munich but did not realize how complicated my departure would be. The ticket to Munich from Florence only indicated that I was to get off in a small suburban station and wait for the

main train to depart. Not knowing exactly which stop I was to exit, I waited a bit too long to de-board and found myself a long way off in the northern part of town. After exiting, I found a train heading back to the proper station and was very lucky that they had a ticket office. I was able to get another train with connections to Munich, which did not delay me much. Florence has a wonderful citywide Wi-Fi system so I was able to use my computer to send Josef Bogner in Munich a message as to when I should arrive.

The train to Munich passed north Verona, Rovento, Trento and Bolzano and then climbed steadily through towns with both Italian and Austrian names, (Vipiteno (Sterzing), Fortezza (Franzansfeste), to the Brenner Pass at 1371 m, then descended to Steinbach in Tyrol. The line then headed due east to Jenbach, Wögil and finally north to Kufstein, Rosenheim and Grafing before reaching Munich about 7:30 PM. It was still daylight and Josef met me at the station. We went in his car to the botanical garden where he had booked me a room in their Guest House.

The following day was Saturday so I got up early to take pictures in the adjacent gardens because by now many plants were flowering. When Josef arrived, we went to the herbarium and worked all day with the collections. The

Munich Herbarium (M), (Botanische Staatssammlung München) founded in 1813 is located inside the Botanical Garden (Botanischer Garten München-



Joachim Esser

Nymphenburg is found at Menzinger Str. 65 west of downtown Munich in Bavaria. It has 3,200,000 collections and has several curators, but **Joachim (Hajo) Esser** is in charge of the Monocot Herbarium. Since I was working on

the weekend, I was assisted by, **Josef**

Bogner, who is officially a

retired gardener that spent nearly his

entire career there and now has an

honorary Ph.D. Josef built up the

Munich living collections to be the

richest of its kind in the world with more

different genera than any other institution. Josef is the

world's authority on most things involving Araceae and

has dabbled in most groups worldwide, but owing to his

limited resources and time had worked mostly at the

generic level, even coauthoring the acclaimed “Genera of Araceae”, the definitive work on the family. In the

summer of 2018, Josef received the H.W. Schott Award

for Excellence in Aroid Research at the XII International

Aroid Conference in Cali, Colombia. We finished our

work in the herbarium by the end of the day and went to



Josef Bogner



dinner then stopped to purchase a tram ticket for my morning departure for the Munich Hauptbahnhof and my train trip to Vienna. I had intended to visit the herbarium in Geneva even before going to Munich but the herbarium was closed for most of the year owing to major renovations. So instead, I visited Geneva in the spring of 2019 when I was in Europe for a conference held in nearby France. I report on that visit at the end of this report.

❖ *Vienna, Austria*

The route to Vienna from Munich is rather direct, passing through a mostly flat lake-filled region and the German town of Altötting as well as the Austrian towns of Anselden and St. Pölten before reaching Vienna about 4 and a half hours later. I did not realize that we would be arriving at the Vienna Meidling Station, a long way to the south of the center of town where the Reiksherbarium is located. I had chosen a hostel near the herbarium and had to catch the underground to the Hauptbahnhof near the center of town. After I found my hostel, I left my bag at the desk and went to the museum. The Natural History Museum is located at Burgring 7, A-1014 and credited with 3,750,000 collections. It is an enormous place with a number of departments but with the aid of several people,

I found my way in and set to work. The **Vienna**



Bruno
Wallnöfer

Herbarium (W) is one of the oldest and finest in Europe but many of its aroid collections were lost during World War II including most of Heinrich Schott's general collections. Schott was the gardener for the Hapsburg Princes and attended their magnificent greenhouse at the Schönbrunn

Palace near the edge of town. Schott was self-taught, very much like Josef Bogner who basically became the world's only authority on Araceae, describing in the end most of the genera and many of the existing species by the time of his death. His legacy is most-preserved by his thousands of detailed drawings and paintings, which are housed at the herbarium. Their general aroid collections are only mediocre now since no one concentrates on aroids there anymore. Many interesting collections have been made in recent years by, **Bruno Wallnöfer**, the Curator of Vascular Plants who works in the Department of Ucayali in eastern Peru. I had already studied and photographed the famous Schott Icones so by the end of the day, I had completed reviewing all of their Neotropical Collection and even the undetermined plants from other regions including Africa and Asia.

❖ *Prague, Czech Republic*

Finishing earlier than expected, I decided to go to Prague early the next morning but I had no time to arrange for lodging there. I caught a train to Prague and was soon passing northwest through the rolling hills of the southern Czech Republic. In April, the fields were all green with new vegetation. It was mostly farm country with winter wheat already 15 cm tall. Arriving in Prague midday, I set out with my rolling bag assuming that there would be many hotels near the station as there often are. I found nothing and decided to find the Herbarium at **Charles University** and get to work. After asking for information back at the station and purchasing some local currency, I headed for the herbarium. It was not too far away but was difficult to find. I had been there years ago after visiting St. Petersburg for the 1975 International Botanical Conference where I got my first experience traveling in the Communist Block. During the middle of the congress on a free day, I took off alone for Moscow. Arriving from an overnight train ride and neither speaking or reading any Russian, I managed to learn the subway system so well that by the end of the day I had ridden most of the lines and popped in and out of subway stations all day to survey what there was to see. Frequently I was asked by the tour group handlers, “where is your guide” but I

usually just walked away quickly so as not be apprehended. Later when traveling from St. Petersburg to Warsaw, I was thrown off the train in Bialstok, Poland near the Russian border for not having my passport. I think it had been kept by a vindictive border official because I refused to purchase the requisite number of Polish zlotys. Since I was stuck in Poland until 3:00 AM when my passport was promised to be returned on the next train, I took the Polish money that I was forced to purchase and went to a restaurant. The ten dollars' worth of Polish money went so far that after drinking several beers and a big meal, I still had piles of money left. Unfortunately, they closed the place early and I returned to the station to await my train, trying to sleep on a small and hard bench. The two German-speaking Polish station workers who helped me when I was first forced to exit the train, said I could sleep on a table in their break room. That was fine until they got off work at about 12:30 PM. They woke up and offered a big glass of vodka. The drinking carried on until the train arrived and I boarded for Warsaw.

My first visit to Prague followed on this same trip. After working at the herbarium in Berlin, I went into the Eastern Zone (the only way to get to Prague in those days) and at the Friedrichshafen Station where they

check passports, the process seemed interminable. When they finally said I was free to go, they did not give me my passport. Since I had to travel to yet another station and find my train, I bolted out. It was not until I was aboard and the train was moving that I realized I did not have my passport. I tried in vain to find the porter, who only arrived as we were rolling into the station on the northern Czech border. I must say that the East Germans were efficient because they reported that my passport would be on the next train even before we had rolled to a stop. Missing your passport was more serious in East Germany than as it had been with the Poles, because I was locked up in a room until my passport arrived. This delay was bad for my schedule though because it meant that at the end of the day I was not able to get to the herbarium I wanted to see. The Herbarium at Charles University was readily available in downtown Prague but when I asked for the National Herbarium, they said that it was a long way away and I could not reach the place in time. It was not until several years later when I visited Prague again in 1991, this time coming from Kiev, that I managed to see that herbarium. I had planned to go by train from Kiev to Prague but we were unable to arrange for a ticket. In desperation, the ticket agent just told me to go get on the train without a reservation. I did and the conductor put me

in the linen closet (really a nice place with a window and a seat) but it enabled me to get to Prague. I nearly got into trouble in the middle of the night when I decided to take a picture of the train rail-changing process where there was a switch from the Russian 5-foot wide tracks to the European 4-foot 8.5-inch tracks. Why that would have been something that they wanted no one to take pictures of, I do not know. That time when I arrived in Prague the next morning, I did find the National Herbarium but it was way out of town in a castle that had been property of the King of Czechoslovakia. I stayed in a nice apartment near a beautiful lake with black swans. The next day in the herbarium, I was told that I had a telephone call which I considered strange since I thought no one, including my wife would know where I was. The person on the phone was a guy named, Giri Haager who asked if I would come see his aroid collection. Since he knew the Curator, apparently the Curator told him that some aroid specialist was at the herbarium. I figured it was a waste of time for me to go visit his collections since a population that had been imprisoned for nearly 40 years would be unlikely to have anything new and exciting, but his collection proved interesting because Haager had been a part nearly a decade going on trips with Czech volcanologists who apparently were experts at predicting when volcanos were

going to explode. Giri (George), now a good friend, had been able to visit Mexico, Venezuela and Ecuador and had brought back many live plants, a lot of them new to science.

The **Charles University Herbarium (PRC)** is located on the second floor of a large old building not far from the main street (Benáška 2/ Prague 2 CZ12801) where I exited the streetcar with my roller bag. There are three staff members who are Curators in the Phanerogamic Herbarium: **Michal Štefánek, Patrik Mráz (Head Curator) and Jiří Hadinec.**



Michal
Štefánek



Patrik Mráz

The herbarium was laden with plants, many of them in unmounted condition. I was assigned a table near the window not far from the aroid collections. One of the first things I did after turning on my computer was to get onto Wi-fi to find a place to stay.



Jiří Hadinec

I had managed to find a hotel in downtown Prague, the Hotel Bologna and made my way there after finishing at Charles University. On my way back to the street, the rattling over the rough stony sidewalks and streets had finally done serious damage to the wheels on my bag and one of them fell completely off so I had to buy another roller bag on my way home.

Before I left the Charles University Herbarium, I was given instructions on how to reach the **National Herbarium (PR)**, the other large herbarium in Prague. It had been moved yet again to another place, so the following day I took a tram to the edge of town, then a bus to a small village where I was given bad advice and walked a kilometer in the wrong direction. Finally, returning to the point of departure I asked again, this time getting good advice so I finally reached the herbarium about 10:00 AM. The National Herbarium which is said to be located at Cirkusova 1740, Praha 9 - Horni Pocernice CZ-190 00 was founded in 1818 and is reported to have 2 million specimens. I was told that I would be unable to see a good deal of the collections because they were not mounted but I was given the



Prague Herbarium



Charles Herbarium

opportunity to determine some of the unmounted collections. Taxonomy has diminished as a discipline, no more so than in Europe where there are so few new species that there is little excitement about taxonomy. Neither of the Czech Republic herbaria in Prague had any new species to be discovered but both have interesting type specimens that I was able to photograph.

❖ *Budapest, Hungary*

On my first visit to Eastern Europe, I was on the quest for the illusive specimens collected by H. W. Schott. It had been reported by an article in *Taxon* that there were Schott collections (at the time all were believed to have been lost in World War II) in the herbarium in Budapest. Since I was already nearby, I decided to go to Budapest to see what I could find. After arriving at the **Hungarian Natural History Museum**, which was located in the middle of a big park, I met the Director, **Júlia Szujko-Lacza** who had written the article about the presence of Schott collections in her herbarium. Still, a thorough search through the herbarium did not turn up any genuine Schott collections but only species that bore Schott's

epithet or herbarium specimens of some few cultivated plants that Schott had identified, but no actual Schott specimens. It had been a proverbial wild goose chase.

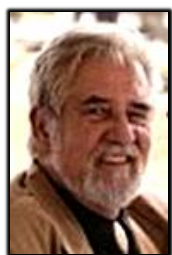
On another occasion in hopes that Adolf Engler, once a professor in Breslau (later Wroclaw, Poland), had deposited his collections there, I contacted a Polish scientist at the XIV International Botanical Conference in Berlin (1987). Unable to make contact with the delegate, **Beata Zagorska-Marek** from Wroclaw University directly, I finally got a note saying that I would be welcome to visit her in Wroclaw. I arrived in Wroclaw and managed to call her number with the help of a stranger who had Polish currency. She did answer and they came to get me. In the middle of the Cold War, we spent the rest of the night talking in their little concrete-walled apartment about the dire situation in which they lived, the possibility that the Solidarity Movement would change Poland and many other topics. We are life-long friends and have revisited each other over the years. The **Wroclaw Herbarium (WRSL)**, which I have visited twice, is curated by, **Krzystof Swierkosz** and was founded in 1821. It has about 500,000



Krzystof
Swierkosz

collections including considerable numbers of Araceae but no new species.

Having finished my work in Prague, I departed the following day for the city of Teplice on the northern



George
Haager

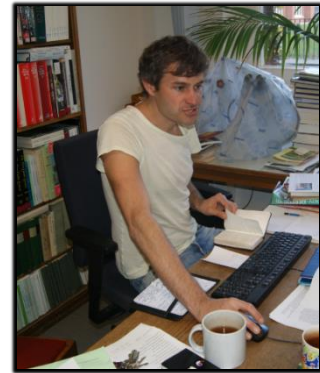
border of the Czech Republic where my old friend, **George Haager** was designing and building a botanical garden. He had already served as Director of the **Prague Botanical**

Garden and had great resources and contacts all over the world. He ended up developing one of the finest botanical collections in Europe. I toured his facilities and I also met, **Ladislav Holy**, a long time correspondent from the Czech Republic who had a big interest in aroids with lots of living collections. After spending the night in George's garden apartment, I took a bus the following day across the border and through a swathe of beautiful countryside to Dresden, Germany. My wife and I had visited the botanical garden only a few years earlier in 2005 after the XVII International Conference in Vienna when George was just beginning to build up the garden and at that time, we had also traveled to Dresden. However, we traveled by train rather than by bus then by train on to Wroclaw, Poland again to visit, Beata Zagorska-Marek whom I mentioned earlier.



❖ *Berlin, Germany*

From Dresden I traveled by train to Berlin to work at the **Berlin-Dahlem Botanical Garden** with its world famous Herbarium (**B**) and large 43-hectare botanical garden. The garden is located at Königin Luise Str. 6–8, D-14195, Berlin. **Nils Köster**, my aroid colleague, met me at one of the suburban stations that lies near the garden took me to the garden's Guest House. I immediately set to work on identifying the very extensive aroid collections. The herbarium, founded in 1815, has more than 3.8 million specimens. Despite the fact that the herbarium destruction of World War II left the Berlin Herbarium without most



Nils Köster



Robert Vogt

of its vast general aroid collections, the type specimens were apparently concealed elsewhere out of harm's way because they mostly survived. What remains is still a remarkable collection since many of the plants are not known from any other specimen anywhere.

The Curator is, **Robert Vogt**, but since I was working again on the weekend, I had to make use of my friends to let me into the herbarium to do my work.

I spent much of the next two days in the herbarium but also spent time working in the greenhouses with Nils and Duban Canal, his student who is working on the phylogeny of *Philodendron*. We went through all the greenhouse collections to make determinations and to discuss problems with some of the more poorly known species. Saturday night we had a nice evening out at a local restaurant. On Sunday, I returned to the herbarium for the rest of the day then on Sunday evening, Nils took me to the bus station for a special bus to go to Vilnius (34 Euros), for the first leg of my trip to Russia. My bus to Vilnius left at about 8:00 PM and by 1:00 AM, we had already reached the Polish capital of Warsaw. By dawn, we had already reached the Lithuanian border and by midday, we were in Vilnius. By this time, it was raining heavily so I decided to go on to Latvia. I spent the rest of the day traveling to Riga, arriving there late in the afternoon. The route from Vilnius to Riga was through mostly low, weakly rolling hills and even swampy marshlands. There were no large towns, mostly small villages and farms. On the other hand, Riga, founded in 1201, was an elegant and exciting city, one built up from the time of the Russian Tsars and even earlier periods when it was controlled by the Germans and also the

Swedes. It declared its independence in 1918 following World War II but soon found itself again under Russian control.

❖ *Tartu, Estonia*

I spent the night in Riga at the Hotel Mosaic in Latvia, then took the bus to Tartu, Estonia the following morning. Tartu, while much smaller than Riga, is the educational center of the Balkan countries with the **Natural History Museum and Botanical Garden** at the **University of Tartu** along with its Herbarium (TU). 38/40 Lai Street Tartu 51005, Estonia. The University was founded in 1632 by King Gustav II when Sweden controlled the area.



Ülle Reier

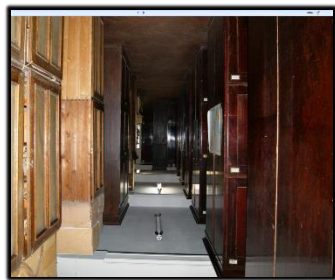
Its' Curator of Seed Plants and Ferns is **Ülle Reier**. She had responded to my email messages and was looking forward to meeting me, showing me the herbarium and its associated botanical garden. The herbarium had largely temperate European specimens of Araceae as well as some really, old tropical collections. The botanical garden is really first rate and has a nice old collection of aroids. At the close of the day, I caught a bus to go north to Talinn, the political capital and the largest city in Estonia. I arrived there just before dark and managed to find the

hostel I had booked. It was near the center of town. Talinn is a small but very old town that has been under some other countries thumb almost all of the years of its existence. First declaring its independence in 1918, it was overrun by the Germans (1941-1944) and later had 5 days of independence before the Soviet Union invaded and controlled it all during the Cold War. Again, it declared its independence in 1991 and became a member of the European Union in 2004.

❖ *St. Petersburg, Russian Federation*

Since the next bus to **St. Petersburg** was not until the following evening, I took a walking tour of Talinn then headed for the bus station to check in for my trip to Russia. The buses in the Balkans are exceptional, modern, comfortable and inexpensive, costing less than \$30 to go between any of the major cities (my bus from Estonia to Russia was only 18 Euros). We crossed into Russian territory not long after we left Talinn. It cost more than 10 times as much to get a Russian visa as it did for the transportation to St. Petersburg. Arriving in St. Petersburg at just after dawn, the bus dropped us off not at a main terminal but rather just along an ordinary street, sort of like the Megabuses operating in the US do. I had arranged for a hotel (mini Hotel Zlatonst-Voeiliova on

Kammenoostousky 19) with an internet service and it was very easy since I had not had to prove that I had a visa. Indeed, it is something you have to do because to get a visa you must tell them where you are going to be staying. I took a taxi to the address indicated for the place I had booked. The place that I booked was called a hotel, but it was more like an apartment building, located not too distant from the botanical garden. As soon as I got my bags in my room, I headed out for the botanical garden



Herbarium in
Peterburg

using the photocopied map I had gotten off the internet and I walked to the garden, which was less than 1 kilometer away. The Herbarium of the **Komarov Botanical Institute of RAS (LE)** has its

St. acronym from when the city was called, Leningrad. I had visited the herbarium before, first back in 1975 during the XII International Botanical Congress, then again in 1991 when I visited Misha Serebryanyi who accompanied me on a train from Moscow and later went with me to the botanical garden in Kiev. The herbarium had not changed at all over the years. The herbarium cabinets are massive wooden cases with doors locked with a big key. The Komarov Institute is an old one, first founded as a botanical garden in 1714 and as an herbarium in 1823. It



Irina Illarionova



Larisa Orlova

is located inside the botanical garden at 2 Prof. Popov Street, Saint Petersburg 197376. It is an herbarium rich in old material on a world-wide basis but its Neotropical holdings are mediocre. The botanical gardens are wonderful and rich in species. **Leonid Averyanov** is the Curator of the Herbarium and **Irina Illarionova** serves as the Collections Manager of Vascular Plants. I was greatly assisted by one of the curators, **Larisa Orlova**, who's work area was near the Araceae. It is good that I arrived during the middle of the week because I was unable to work on the weekend. I spent Saturday looking around St. Petersburg and caught a flight to Helsinki and on to Stockholm on Sunday.

❖ *Stockholm, Sweden*

The flight to Helsinki was interesting because we were not far away and the plane did not get too far off the ground so I had an excellent view of the entire Gulf of Finland from Helsinki to Talinn, which is less than 50 miles apart. Stockholm loomed



Leonid Averyanov

on the horizon ahead. After a considerable delay in Helsinki, a connecting flight got us to Stockholm by 3:00 PM. The airport is way out in the country and the wait for a bus was long. From the main bus terminal, I had to walk only a few blocks to find the hostel that I had arranged. Again, I was in a room at the City Lodge Hostel near the terminal, which had a number of beds but I had the room completely to myself.

On Monday morning, I took the train out to the main campus of Stockholm University and exited. The **Museum of Natural History** is located a short walk from the University. The Herbarium (**S**) founded in 1758, is one of the finest in Europe and is especially important for me with my strong interest in Ecuador because of its role in the production of the Flora of Ecuador.

The Herbarium's Curator is, **Arne Anderberg**. The herbarium, consisting of separate collections based on geography with the European collections is being housed apart from those of other tropical areas. A long day of work enabled me to finish my review of the material, made easier by the fact that I had made a trip there only a few years earlier after the IV Monocots Conference in Copenhagen in 2008. At the time, I also



Arne Anderberg

visited the herbarium in Göteborg on the other side of Sweden. At that time, I also visited the wonderful botanical garden located near the Göteborg Herbarium as well as the botanical garden in Stockholm near the Natural History Museum. The Herbarium at the **University of Göteborg (GB)**, located at Carl Skotsberg Gata 22B, SE-41319, Göteborg, is an important one, curated by **Claes Persson** who met me there in 2008 when I studied their collections. Persson took over the job of Editor of the Flora of Ecuador after the death of Lennardt Andersson. Since Göteborg no longer has an active field program following the death of **Gunnar Harling**, senior author of the Flora of Ecuador and also his latter co-editor, **Lennardt Andersson**, I concluded that there would be nothing new for me to see there.

❖ *Copenhagen, Denmark*



Olaf Ryding &
Nina Ronsted

The same situation applied for the collection at the **University of Copenhagen (C)** of which I visited at the same time in 2008. Its Herbarium is much older (founded in 1759) and much larger (about 2.5 million collections). **Olaf Ryding** is the Collections Manager and **Nina Ronsted** serves as the

Curator of Vascular Plants. Like Göteborg, it, too was adding almost no tropical American Araceae so I deemed it not worth revisiting after such a recent study there. It is nevertheless an important collection with many types of Araceae since the Danes were important collectors in the New World.

❖ *Aarhus, Denmark*

It was from the Stockholm main railroad terminal on the following day that I took the train to Copenhagen then on to Aarhus. While I had visited Copenhagen Herbarium only a few years earlier, I had not been to Aarhus since August, 1978 when I presented a paper entitled "Distribution of Tropical Araceae" at the Symposium on Tropical Botany at the University of Aarhus. The



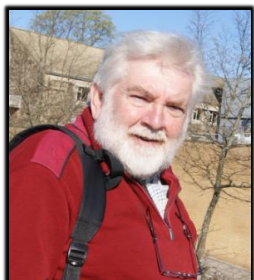
Finn
Borchsenius

Herbarium at the **University of Aarhus (AAU)** has a much more important collection of aroids that those in Copenhagen owing to the former institutions long connection with the Flora of Ecuador. **Finn Borchsenius** is Head of the Herbarium and the Greenhouses at the University of Aarhus. **Birgette Bergmann** is the Manager of the Collections and also plays a role at the Steno

Museum and in the Botanical Garden. For many years, Aarhus provided Curators at the Universidad Autonoma Católica in Quito and many Danes served as Curators there and conducted large collecting operations in the country. While planning my trip to Europe, I had contacted my old friend, **Benjamin Olgaard** who is retired from the university but still doing active research in his office at the university and at the AAU Herbarium. He had invited me to stay with him and his wife, Katrina. I had stayed with them in 1978 during the conference mentioned above when their children were very young and I was anxious to see them again. Benjamin met my train and took me directly to the herbarium where I started determining Araceae. I had seen duplicates of much of their collection since they had sent me specimens on loan over the years as well as material for determination. After a second day and a visit to their living collections



Birgette Bergmann



Ben Olgaard

I was ready to head south. I could not find bus service to the other parts of Europe like I found in the Balkans. I arranged for a train to Brussels since I knew that I would be unable to get into the Leiden Herbarium on Friday because it was a

holiday there for some reason. On the other hand, I was certain that with Frieda Billiet's assistance I would be able to work in the herbarium on Friday in Brussels and if necessary over the weekend.

❖ *Meise, Belgium*

The train ride to Belgium took all day with several connections to get to Brussels late that evening. Aarhus is located on the sub-island in western Denmark. The train headed south to Fensburg, Germany, continued on to Hamburg then south to Hanover, west to Munster, south to Dusseldorf and Cologne and finally west to Aachen and finally reached Brussels before dark. I then had to switch to a slow local train to take me out into the SE Brussels suburbs to Limal where Frieda's house is located. Frieda met me at the Limal Station after I gave her a message about my train schedule. Frieda is now retired from the **Brussels Botanical Garden (BR)** but still volunteers there to maintain the plant records so she still has keys to the herbarium. On Saturday, we went to the herbarium which is located in the NE Brussels suburban town of Meise slightly NW of Brussels to study the collection. The herbarium in Brussels is known for holdings of African Araceae but has a lot of Tonduz collections from Costa Rica and some other material from

the Neotropics. The Herbarium's Director is, **Piet Steffelen** and **Ann Boaerts** serves as Head of the Herbarium. **Frieda Billiet** served for many years as the taxonomist in the living collection and has a strong interest in the taxonomy of Neotropical aroids. On Sunday, we went again to the gardens to visit the living collections. Frieda has a wonderful property that she and her late husband built up from old rundown land with a somewhat collapsed brick building. It is now a most spectacular botanical garden which compares to any home that I have seen. It is always fun to go there.

❖ *Leiden, Netherlands*



Frieda Billiet

I took the train north to The Netherlands, arriving late in the afternoon in Rotterdam. I was forced to check into a hostel far away from the herbarium because Leiden had no economical lodging available. The place I stayed was really unusual, consisting of a series of isodiametric cubicles, which on the outside looked like a mockup model of a molecule. Inside you could not detect that you were walking through these branches from unit to unit.



Piet Steffelen

The **Leiden Herbarium (L)** was not easy to find. The address I had was out of date because after walking to the ancient botanical garden (billed as the oldest in Europe) where the herbarium used to occur, I was told that the



Christel Shollaardt



Erik Smets

herbarium had been moved to **Naturalis**, a new government organization housed in a very nice and immense building located in the other direction from the Leiden train station. Its address is Naturalis, Vondelloan 55, Leiden 232 AA When I got there, the staff asked around and finally told me that the herbarium was intended to be housed at Naturalis eventually (the move is scheduled for July 2019) but that it was still located in an old factory in the northern suburbs. Getting explicit instructions and the bus number, I set off again, finally arriving at the herbarium about 10:00 AM. The Director of the Herbarium is **Erik Smets** and the Head of Collections is **Christel Shollaardt**. The temporary herbarium is now very complex, being a combination of three national collections, the **Wageningen University** collection of largely African Plants, the **Utrecht University** collection of largely Neotropical and the original **Leiden**

Herbarium, which is largely collections from Asia. Once the entire set of collections are assembled into a modern herbarium, it will be one of the finest and most diverse existing collections. The earliest part of the collection



Simon Wellinga

dates from 1575 so it could be the oldest herbarium in the world. The Neotropical collection is mostly from the Guianas and since I am working on the Araceae treatment for the Flora of the Guianas it is of special interest to me. Studying in this current situation is slow because one has to cart the boxes from the herbarium into a room some distance away where specimens can be observed. I received a lot of help from Herbarium Assistant, **Susana Arias Guerra**. It was a special treat to run into Anton Cleef, whom I had met at the II International Ecological Congress in Caracas, Venezuela in February of 1973 where I presented a paper entitled, “Geographical Affinities of the Barro Colorado Island Flora”. I did not even recognize him after 43 years



Susana Arias
Guerra

but knew him well owing to his work with the late Dutch paleontologist, Thomas van der Hammen. Another interesting thing that happened while I was in the Leiden Herbarium was the opportunity to meet, **Simon Wellinga** who had traveled all the way

down from northern Holland with a live plant that he was growing. I had already determined the plant as a new species and he was giving me a live plant to grow.

❖ *Nancy, France*

After two days of work in Leiden, I was prepared to head further south, traveling to Paris then back East to Nancy. The **Nancy Botanical Garden (NCY)** has become one of the most important collections of living Araceae in Europe, in part because of their acquisition of living plants collected by Serge Barrier in Peru and the Guianas, and partly owing to the efforts of **Geneviève Ferry**, their horticulturist who has been working with me in Latin America for the past 15 years. Each time I go there, I spend time describing new species and this trip was no exception.



Geneviève
Ferry

After working in Nancy for two days, it was time to go to the **Paris Herbarium (P)**, which had been completely modernized since my last visit. The herbarium was founded in 1635 and has an estimated 7



Paris Herbarium

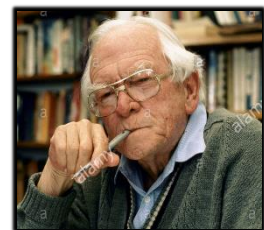


Marc Jeanson

million specimens. It is curated by, **Marc Jeanson**. The collections, once bundled tightly in steel boxes with individual doors, are now housed in open-faced compactors, making study of the collection more efficient. There are now also excellent well-illuminated workspaces. In addition, the collection has been entirely digitized so that online viewing of collections is easy. Geneviève was anxious to go to England and my trip gave her the excuse to go so she came along with me and made my work more efficient by preparing and attaching the annotation labels and fetching and retrieving the bundles of plants from the cases using a tall ladder. Since the herbarium was closed for the weekend, we hurried to finish our work, then took a bus to Reims north of Paris on Saturday. The city is famous for its massive old cathedral where all the Kings of France (except the first king, Clovis) were crowned. On Sunday, we took the train across the channel to Kew and prepared to visit the herbarium the following day.

❖ *Richmond, Surrey, England*

The **Royal Botanic Gardens Herbarium** at Kew is perhaps the world's largest with



Alan Paton



Anna Haigh

an estimated 7 million specimens. It was founded in 1852 and is located near the entrance to Kew Gardens, which also holds the honor of having the world's largest collection of living plants. **Alan Paton** is the Head of Collections in the Herbarium and the aroid specialists at Kew are, **Simon Mayo**, now retired but still working a lot at the herbarium and, **Anna Haigh** who was largely responsible for the creation of the Lucid Anthurium Key. Simon Mayo supervised this project and contracted for Marcela Mora to complete the Lucid Philodendron Key. The Kew Herbarium is always the highlight of my trips to Europe because not only do they have lots of types but have large numbers of general specimens from all over the world and even have substantial numbers of specimens from Latin America, the area that concerns me most. In the past few decades, the majority of the material came from Brazil, an area where I have not collected much owing to the difficulty of getting collecting permits there. Both Ray Harley and Simon Mayo had a considerable interest in Bahia so material from that region is especially interesting. Since Simon Mayo's retirement, Anna Haigh has been responsible for the curation of the Araceae.

❖ *Edinburgh, Scotland*

After two day's work at the Kew Herbarium, we took the train to Edinburgh where we had made reservations for the Hotel Britannia. Since I did not know where the hotel



Edward Harris

was located, we decided to take our bags with the bus directly to the herbarium of the **Royal Botanic Garden, Edinburgh** at the botanical garden then try to locate the hotel with the internet. The bus took us to the main gate on Inverleith Pl, but we then walked back to Arboretum Pl and back west to the entrance to the herbarium. The herbarium is curated by **Ed Harris**. We worked with the collections the rest of the day and printed out a map showing the position of the hotel. Then with the aid of the staff, we figured out how to get there by bus. The place was only serviced by one bus line and we had to change buses once to get there. The following day we figured that it would be easier to walk to the Garden since in a direct line it was not so far away. Unfortunately, we were a bit confused by the map and spent a lot of time going in the wrong direction. Fortunately, we had gotten an early start so lost little time arriving at the herbarium. That afternoon we visited the magnificent and interesting living collections at the Edinburgh Botanic Gardens, really one of the finest in Europe. I had seen a new

species of *Anthurium* which had been vouchered from the living collection and wanted to find out what it looked like in living condition. The plant records showed that it had been collected in the Colombian lowlands on the Pacific slope, which are rich in species so it was not surprising that it was a new species.

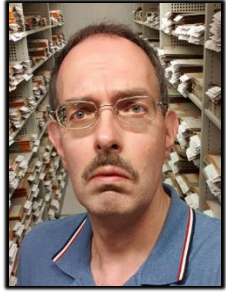
❖ *Geneva, Switzerland*

While to Edinburgh herbarium was the last visited on my large European trip I had failed to visit the very important herbarium in Geneva, Switzerland owing to their temporary closure for remodeling during the course of my visit.



Laurent Gautier

Fortunately, an opportunity arose to visit Geneva during the spring of 2019 after I was invited to present a lecture at a conference in southern France not distant from Geneva. **The Conservatory and Botanical Garden of Geneva (G)** is one of the best in the world and fortunately received no damage to its old collections during any of the European wars. Its aroid collections complement well other large aroid-rich herbaria of Europe including Berlin, and Kew for the presence of old and historic collections. The aroid collections are in a subterranean space with a good work area beneath a sky light. The **Head Curator** at



Nicolas
Fumeaux

the Geneva Herbarium is, **Laurent Gautier**. Fortunately, before my visit the **Curatorial Assistant, Nicolas Fumeaux** had pulled all the relevant material that I would be consulting and stacked it in the comfortable work site beneath the skylight, including material from the DeCandolle and Dellesart Herbaria. I stayed at the Garden's nearby guesthouse restaurant so that the work went efficiently

All in all, the broad range of European herbaria collectively hold many of the important type specimens I needed to consult. As one might have suspected, the European herbaria, more frequently than not possessing older collections, had proportionately fewer specimens of undescribed species largely since aside from Aarhus, Göteborg, Kew, Paris, Stockholm and Utrecht, few have had strong collecting programs in the Neotropics in the recent past or ever. In recent years Florence and Vienna have initiated field programs in the Neotropics but have relatively few new species of aroids. Still, the but the trip had been a profitable one, especially for the opportunity to see many type specimens.

OPUS Trip to Central America

September 19 – November 1, 2016

Thomas B. Croat, P. A. Schulze Curator of Botany

Missouri Botanical Garden

❖ *Travel History*

My third and final OPUS trip to study herbarium specimens of Araceae was to Central America, an area that was like home to me. I first visited Central America in 1962 on my way to a job in the Virgin Islands. It was my first teaching job after finishing my bachelor's degree at Simpson College near my hometown in Warren County, Iowa. I had operated the family farm all during my college years and Simpson was the only place where I could have driven each day to attend classes. That summer I took off by bus to visit the Century 21 Exhibition, the World's Fair in Seattle, Washington then traveled south to California and on to southern Arizona where I intended to cross the border near Nogales, Mexico. I traveled by bus south to Mazatlán. The bus from the border broke down in the middle of the night and the passengers were all out sitting along the highway in

the darkness. It was my very first encounter with Spanish and I vowed to learn the language of this area. We communicated with only a few words of English because though at the time I spoke German rather well, none of the others spoke either fluent English or German. We were traveling along Hwy 15 through the Sonoran Desert and broke down somewhere between Santa Ana and Hermosillo. Shortly before dawn, we were eventually rescued by another bus, and then continued on to Mazatlán where I changed buses to Guaymas and traveled on to Culiacan and Mazatlán. From Mazatlán, I took buses east to Durango and Zacatecas before making it to Mexico City. In the capital of Mexico, I visited all of the historic sites, the Zocalo, the Floating Gardens of Xochimilco and even the Aztec capital of Tenochtitlán, the ancient capital of the Aztec empire which was founded in 1325 in the marshes of Lake Texcoco and once was the largest population in Mesoamerica with an estimated population of 400,000. Later I traveled on to Oaxaca, Tuxtla Gutierrez and to Guatemala. I had limited time since my main goal was to get to Panama for a flight to San Juan and on to my assignment in the Virgin Islands.

It was not until several years later that I returned to Mexico, then as a botanist. After a year of teaching in the Virgin Islands and 4 months of traveling in South America, I returned to Iowa for another semester of teaching then went to the University of Kansas for graduate school. During my second year there, I had an opportunity to travel to Costa Rica for an OTS course. A University of Kansas entomologist, Marty Naumann was traveling to Costa Rica and I went with him, traveling in his camper truck through Mexico and Central America. On the way, we stopped at the base camp on Mount Popocatepetl and I got up at dawn (about 4 AM) and climbed up to the snow line before descending. It was my first and last experience with climbing at such thin air sites. The trip up was slow with rests needed between each few steps and the way down was so easy that I found myself running uncontrollably and finally had to simply fall down to stop. This fall resulted in damage to my leg and a terrific headache the rest of the day.

That summer spent in Central America, especially in Costa Rica was my first real experience with tropical plants even though I had traveled throughout most of the West Indies and South America during the summer after I left the Virgin Islands. It was during the OTS course in

Costa Rica where I began to learn the names of these plants, especially with the assistance of the late Dr. Jesus Idrobo, one of the professors who assisted in the course. Jesus, a botanist from the Universidad Nacional in Bogotá knew most of the common plants in Costa Rica and I reveled in learning their names and taking small samples to study and illustrate later in the evenings.

My present trip thus brings back fond memories of my earliest days in Central America. After I took my first job at the Missouri Botanical Garden, I began to travel frequently to Central America, eventually purchasing my first truck, a 1966 Chevrolet upon which I built a special camper with a built-in gas dryer, which enabled me to collect and dry plants on a continuous basis. That truck ended up in the Río de La Paz in Costa Rica after a significant roll down a mountain side so I built another improved version and went back again in a 1976 model.

❖ *Mexico City, Mexico*

My Central American OPUS herbarium tour began where I had been many times before, in Mexico City. I first attended the International Aroid Society's (IAS) Annual Meeting in Miami where I was invited to give the first lecture for the Kampong Lecture series. As an Adjunct

Member of the staff of the Pacific Tropical Botanical Gardens, I usually stay at their Miami Property, the Kampong, the former home of the famous plant explorer, David Fairchild. It is a historic site located along Biscayne Bay in Coral Gables, and not too distant from Fairchild Tropical Gardens where we hold our Annual IAS Meetings. On Saturday afternoon, we had four lectures and I presented a paper demonstrating the immense changes in the size of *Anthurium*, section by section.



Gerardo J.
Salazar

On Monday, Sept. 19th I flew to Mexico City and immediately went to the **Universidad Autónoma de Mexico (UNAM)** for work in their **Herbarium (MEXU)** where **David Gernandt** is the Curator of the Herbarium.

The Director, **Gerardo J.**

Salazar met me and showed me around the collection. It was a large collection and I worked there for nearly three days. The herbarium is broken down into four large rooms and the collection is rich, mostly Mexican and the specimens are housed in compactors. There are nice workspaces along the entire length of each compactor. I had contracted to check the



David Gernandt

determinations of Jonathan Amith, an anthropologist from Gettysburg University who has a massive program in Mexico (Puebla and Guerrero) working primarily with the Mixtec indigenous group in Guerrero and with the Nahuatl speaking tribes of Puebla State. Nahuatl, the most important of the Uto-Aztecan languages, was the language of the Aztec and Toltec civilizations of Mexico. During October and November, 2018 I had an opportunity to work with Jonathan directly on a trip that included Guerrero, Puebla, Yucatan and Quintana Roo States.

While in Mexico City, I also traveled by the underground metro system to the north edge of Mexico City to the **Instituto Politécnico Nacional (ENCB)** to determine their herbarium collections. This was the herbarium built up by the Polish immigrant and famous Mexican botanist,



Jerzy
Rzedowski

Jerzy Rzedowski. To get to the Politécnico University from UNAM, I took a bus to Metro CU, which is the main metro terminal for the National University. Buses leave from the Perisur Shopping Center, the main shopping district south of the university. The Universidad metro station is at the end of the green line and one must go north about 15 stations to Hidalgo Station then transfer to the blue line and go NW to

Colegio Militar Station which is not far from the Polytechnico. It is located near a major hospital and I was lucky that a woman on the train was going to the hospital to visit her niece and walked along with me to make sure I found the herbarium. The herbarium specimens at the Herbario Polytechnico are tightly packed into regular cases owing to a lack of adequate herbarium cabinets but the collection is large and impressive.

❖ *Puebla, Mexico*

My next stop in Mexico was in Puebla southeast of Mexico City and I took an early morning bus to that provincial capital to visit the Jardín Botánico. I checked into an old colonial hotel in the oldest part of Puebla. The Hotel Colonial fits its name and it was tucked in between two streets with the front situated on a closed pedestrian street. The elevator was one of the old style types that had a wheel with a handle to control the DC voltage to the elevator's motor and thus had to have an operator to run it. The room was in period style and looked out over the central market and the cathedral.

The Jardín Botánico Benemerita Universidad Autónoma de Puebla (UJAT) is a relatively young

establishment and its Director is, **Maricela Rodríguez-Acosta**. Maricela's husband, **Allen Coombes**, is English and has settled permanently in Mexico. The aroid herbarium collection was small but interesting, mostly from Puebla State and most of the collections were in excellent condition and well determined. Allen has a keen interest in the living collections in the botanical garden, especially with the genus *Quercus* and has done a remarkable job of establishing many interesting species from many families in the garden, often creating the special microhabitats needed for the survival of particular groups. In addition to determining the herbarium collection, I was given a detailed tour of the living collections before being delivered back to the center of town.

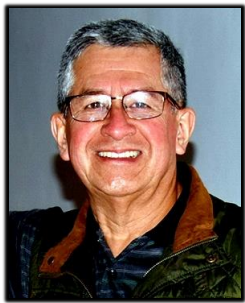


Maricela Rodríguez-Acosta & Allen Coombes

❖ *Xalapa, Mexico*

The following day I went early to the CAPU bus station on the north side of Puebla to board a bus to Xalapa, located further to the NE in Veracruz State. The road to Xalapa is excellent, mostly 4-laned and relatively traffic free at that early hour of Saturday morning. Most of the route was still rather heavily forested and green in

September. I was met at the Xalapa bus terminal by my good friend and Mexican aroider, Pedro Diaz. We went to the hotel that he had arranged to have me stay. It really did not have a proper name and the big sign over the door said “Cuartos 49 Pesos” which is less than 3 dollars. Despite the cheap price, that room proved to be large, clean, well lit and comfortable with a clean bathroom and warm water so I could not complain.



Sergio
Avendaño
Reyes

After we dropped off my bags, we took a bus to **Consejo Nacional de Ciencias y Tecnología (CONACYT)** in their new buildings near the old **Jardín Botánico** where the best herbarium in Xalapa (**XAL**) is located. Because it was Saturday, we were initially told that we could not work in the herbarium even though there were guards there who had keys to the herbarium. Still, we asked if anyone was going to be coming in to work on Saturday afternoon and we just sat and waited since it was raining very hard and we had nowhere else to go. Within about a half hour, one of the guards said that indeed someone was going to be coming in, the actual Curator of the Herbarium, **Sergio Avendaño Reyes** so we indeed lucked out. Sergio got us started and we spent

the rest of the afternoon going through all of the collections. That was rather lucky for us because otherwise I would have lost two days. The XAL Herbarium is located in new compactors in a nice air-conditioned room. The collection of Araceae is almost completely from the State of Veracruz but it is a comprehensive collection for that State.

❖ *Oaxaca, Mexico*

Early the next day on Sunday I met with, **Silvia Salas**, a graduate student in Xalapa who is involved with the **SERBO** one of the two herbaria in Oaxaca. She was



Thorsten
Kröemer



Amparo
Acebey

anxious for me to go to the Serbo Herbarium in Oaxaca. The herbarium is part of an NGO, an institute devoted to the study of biology in Oaxaca State and I was told that we could stay overnight in their facilities. I decided that I would take Pedro along with me because our initial intent was to travel from Xalapa to Villa Hermosa to work in the herbaria there but Oaxaca was a lot closer so we went there first.

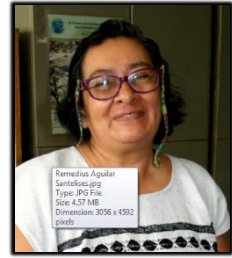
About noon on Sunday, Pedro and I went to visit **Thorsten Kröemer** and **Amparo (Carola) Acebey** in

San José Cuatemoc located north of Xalapa and not distant from the Institute we had visited on the previous day. Thorsten is a German ecologist interested in epiphytes and teaches at the Universidad Veracruzana's Centro de Investigaciones Tropical. His wife, Amparo is an aroider and worked with me on the Araceae of Bolivia (Croat & Acebey, 2005; 2014) and more recently published the Araceae of Veracruz (Croat & Acebey, 2015).

Carola did a Master's Degree in Germany at Göttingen University and recently finished her Ph.D. at the Universidad Veracruzana, the same institute where Thorsten teaches. Amparo works part time for the same institute. They have two young children, Bruno and Anna who are growing up trilingual owing to their diverse parents (Thorsten recently spent his sabbatical year in Germany with his family while Amparo is a Spanish-speaking Bolivian) and by attending a school where English is encouraged.

Later that night, we took the overnight bus from Xalapa to Oaxaca, leaving at 9:30 PM and arriving in Oaxaca at 5:30 AM. By the time we got some breakfast at the bus station, it was time to call a taxi to take us to **SERBO**,

which is located in San Sebastián Tuxtla near the south edge of Oaxaca City. Silvia Salas's sister, Nancy runs the office there and met us at the herbarium to get us settled in. We worked on the small but impressive SERBO aroid collections until about 10:00 AM then were met by a woman from the herbarium at the school of postgraduate education which is located on opposite, north side of town. That herbarium curated by, **Remedios Aguilar Santelises** is much older than the SERBO Herbarium but has somewhat fewer collections. Even so, there were several new species in the collection.



**Remedios
Aguilar
Santelises**

❖ *Villahermosa, Mexico*

Early the following morning Pedro and I took a taxi back to the CAXA bus station in Oaxaca and took the only morning bus leaving the city. There were other more direct buses going to Villahermosa but only in the evening. The bus followed the Interamerican Highway SEE to Juchitán de Zaragoza. The vegetation all along this 2-lane highway was very lush owing to the rains and very different from the way I remembered it in July when I saw it last. We first stopped at Tehuantepec to drop off passengers but then as we tried to enter Juchitán, we ran

into a road blockage owing to some protest and had to turn around. The bus driver knew another way into town but it involved going down some small streets not designed for buses, often scraping under trees. By the time we reached Juchitán, it was already after noon and we had to wait more than an hour for another bus that took us on to Villahermosa. The trip took us straight north along Mexican Hwy 185 through Matias Romero to Acayucán, Veracruz, then northeast to Coatzacoalcos on the Mexican Gulf Coast and finally due east to Cárdenas and Villahermosa. We were met at the bus station in Villahermosa by Pedro's girlfriend, Rocio Santiago Biguata who drove me to a hotel. They came back early the next morning before dawn to get me again and Rocio dropped us off at a bus waiting to depart for Cárdenas. The drive there was less than an hour north of Villahermosa. We had passed through it on our way to Villahermosa the night before but Pedro had made arrangements for the Curator of the Herbarium of the **Colegio de Postgraduados in Cárdenas (CSAT), Eustolia García López**, to meet us there the following morning. The collection was moderately small and largely from Tabasco so it did not



Eustolia
García López

take long to make annotations. After we finished our work, we returned to Villahermosa and went to the **Universidad Juárez Autónoma** where Pedro was scheduled to give a talk at a conference. While I determined the collections in the **Herbarium (UJAT)**,



Nabum
Muñiz
Chavarria

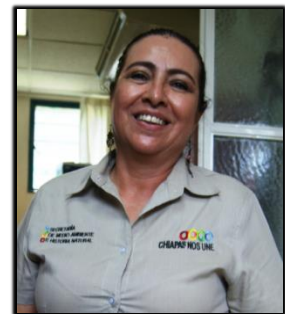
Pedro worked on his talk. The Curator, **Nahum Muñiz Chavarria** was kind enough to fetch and return the specimens I was reviewing so that it did not take long to go through the entire collection.

We went to another building to hear Pedro's presentation on the "Araceae of Tabasco" and once we had finished we were again met by Rocio who drove us north of Cárdenas then east to the Municipio Comalcalco where Pedro's parents live and where he has a large collection of Araceae from Tabasco. There are some species in the collection that may be new- one a *Monstera* and another a *Syngonium*, so I was certain to take detailed photographs and Pedro made herbarium specimens.

Back on the road, we again returned to Villahermosa to the bus station where I caught that first bus to Tuxtla Gutierrez. The road through the mountains from the coast up to the highlands was often choked with traffic but we

made it to Tuxtla Gutierrez before midnight and I went to the hotel nearby where my friend, Miguel Angel Pérez Farrera had made reservations. Unfortunately, I was a day late and they had therefore canceled the reservations for both nights. I went to the nearby Palace Inn, which was more expensive but very nice.

In the morning, I called Miguel who sent, Hector Gómez Dominguez to take me to the **Jardín Botánico** and to the **Museo del Instituto Nacional**. Hector is a serious plant collector and was on his way to San Cristobal de las Casas so he agreed to take pictures of all of their Araceae in that herbarium and to give me the images later in the afternoon when he returned to Tuxtla Gutierrez. This was wonderful because the following day was Sunday and I would not be allowed to work. The herbarium at the botanical garden is the **Faustino Miranda Herbarium (CHIP)** in honor of the Mexican botanist who founded the herbarium. He has been honored by the large and attractive



Teresa Cabrere
Cachon

Anthurium faustomirandae Pérez-Farr. & Croat. The modestly large collection of Araceae was reasonably well curated and pleasant to work even if it is a bit too warm. The CHIP Herbarium had several active

workers including **Biol. Francisco Heman Najarro**, **Biol. María Guadalupe Diaz Mantesinos** and even the Director of the Museum, **Biol. Teresa Cabrera Cachon** came to introduce herself.

❖ *Chiapas, Mexico*

I finished at CHIP a little after noon and made arrangements to be picked up by yet another botanist who took me to the **Eizi Matuda Herbarium (HEM)** which is a part of the Universidad de Ciencias y Artes de Chiapas. The Curator is my old friend, **Miguel Angel Pérez**



Farrera who I visited years ago. We took a long trip to Eiza Matuda's old collecting locality on Mount Ovando, which is the type locality of many species, including *Anthurium ovandense* Matuda. It was a long hike into the area and we spent the night in a small village where we tried to sleep on a concrete floor without blankets or pillows while some medical team talked about the blood samples they were working on until late into the night. Later Miguel Angel and I drove in his car down to the Gulf lowlands to Los Tuxtlas in Veracruz State, where there is a wonderful botanical garden operated by **Universidad Autónoma de Mexico**

(UNAM). This is the same locality where Amparo Acebey did her Ph.D. studies while Thorsten was interim Director of the institute. I made a second visit to the Los Tuxtla field station in 2008 when I visited Carola to complete the Araceae for the Flora de Veracruz Project. The area is one of the richest in Veracruz State and one of the largest tracts of virgin forest. At the time we went to Los Tuxtlas, I was working on my Revision of *Dieffenbachia* for the Flora of Central America and needed to see an unusual population growing there. Fortunately, even though the Director was not present and we were denied access to go into the reserve, we were able to find a large population of the plant growing near the entrance to the field station.

The **Herbario HEM**, part of the **Universidad de Ciencias y Artes de Chiapas**, is much larger than that of CHIP and I had to work until about 8:00 PM to finish. Miguel Angel had left someone there with orders to drive me back to my hotel when I finished. In the morning, I took a taxi to the bus station and took the first bus to Comitán near the Guatemalan border. We reached San Cristóbal de las Casas within an hour and arrived at Comitán by 1:00 PM. There I had to wait about an hour for the first bus to Ciudad Cuauhtémoc, the village that

lies on the border and where you to go through Mexican Immigration to get your passport stamped. The area became flatter as we approached the Guatemalan border. From that distance Guatemala looks like a big mountain and indeed after we crossed the border the route became mountainous with deep gorges and steep valley walls.

In Ciudad Cuauhtémoc, after I got my passport stamped for my exit from Mexico, I took a taxi to the small Guatemalan town of La Mesilla. It is a chaotic place but remarkably easy to pass through. I found a window in a building where I got my entrance stamp but there was no customs inspection at all. I stopped at one of many money-changers to get Guatemalan quetzals for my remaining Mexican pesos. Then I caught a moto-taxi to the area where buses were departing for Huehuetenango. The buses are large but the seats crammed close together. My big rolling bag was hefted up to the roof on a ladder affixed to the outside of the bus. I had a hard time throwing this bag into the back seat of a taxi since it got heavier as moved along my route, mostly owing to everyone giving me books that they are donating to our library back at the Garden. Still a skinny little kid scrambled up the ladder with this big bag on his back like he was carrying a football. The driver let me sit on the

first seat which had space for my legs. I shared the seat with a woman and her child and as we progressed up the road the driver continued to stop and pick up more people until there was not even room for them to stand in the aisles and the loading honcho was hanging half way out the door trying to get more passengers. When they insisted that I slide over to allow for yet another person in my seat I told him that he was breaking the law by loading so many people in the bus. After that, he at least did not insist that I share the seat with yet another person. We passed through several sizeable cities including Santa Ana Huista, San Antonio Huista, San Pedro Necta, San Ildefonso Ixtahuacán and San Sebastián Huehuetenango before reaching the large city of Huehuetenango. The entire road was two-lane, narrow and winding but without excessive traffic.

By the time we reached Huehuetenango, the capital of the department with the same name, it was just starting to get dark and it had already started raining lightly and I worried that my bag would get soaked up on the roof of the bus but when I finally got it back into my possession it was dry at least on the inside. The bus stopped in a filthy market area with lots of debris on the pavement and I carefully rolled my bag through the rotting fruit and

banana leaves to a small hotel. Since I would be leaving early the next morning the proprietor let me stay in a big room on the ground floor with two beds. I then went out to do some shopping, buying some bread and fresh fruit just as the market was closing down.

❖ *Guatemala City, Guatemala*

Unbeknownst to me, there was a time change from Mexico to Guatemala so when I got up at what I thought was 6:30 AM it was actually an hour earlier so when I arrived at another bus station to catch the bus to Guatemala City it had not even opened up yet. Unlike most cities in South America which have large central bus terminals, most bus companies in Central America have their own terminals and these are scattered all over the place, usually on the edge of town from which they operate. They are not even located near a hotel which makes it difficult to find a room.

The Huehuetenango-Guatemala City bus traveled through very scenic territory and through the cities of Sacapulas then through part of the Department of Quiche and through San Cristóbal in Alta Verapaz just north of Laguna Chicoj before reaching Guatemala City. The city is truly enormous spreading across a broad valley as far as

the eye can see. The bus station for the bus from Huehuetenango was along a major street but I knew not where. I desperately needed to find a wifi place to read my email so that I could find out if I had gotten a response from Fredy Archila with my request for a telephone number. I was told that there was a McDonald's just down the street so I headed there, ordered lunch and checked my email. Fredy had left his telephone number so I took a taxi to yet another bus station to take the Monja Blanca bus to Cobán. The buses left from a shopping center out near the north edge of town. I did not have to wait long for a bus but it was a long trip with the driver apparently paying no heed to speed limits. In contrast to the road from Huehuetenango in the morning this road leading north out of Guatemala City was a nice four-lane highway for much of the way to Cobán. The Cobán region is extensively built up with many plantations of cardamom and coffee. The city of Cobán is large and seemingly very prosperous. Again the bus simply stopped somewhere along a side street and unloaded passengers near its terminal. I called Fredy and he and his wife were soon there to pick me up. They took me to the Carlos V. Hotel, a nice motel-like area set among big trees.

In the morning at 8:00 AM, Fredy and his wife came to get me and we went to a nice restaurant for a typical Guatemalan breakfast. In Middle America, breakfasts are usually a combination of eggs, black bean paste and platano maduro along with some kind of flour tortillas and coffee. After breakfast, we went to Fredy's office and gardens. These are separate from his home but was an old home that he has converted for his use. He has a wonderful collection of orchids and for many of the rarer species in Guatemala he is attempting to grow large numbers of species in order to repopulate natural areas with the same young plants. I had come to visit Fredy with the express purpose of learning more about a new species of *Anthurium* that I was describing in his honor. Fredy had sent me a picture of the plant several years ago and I concluded that it was new but did not know the nature of the stem, something very important in this *Anthurium silvigaudens* Standl. & Steyerm. complex to which it belonged. Upon entering his garden to see the plant, study its stem and to take pictures, one of the first plants I noticed was a large *Philodendron* growing in a tree just outside the door to the garden. I immediately recognized it as a new species, one somewhat aligned with *Philodendron smithii* Engl., based on habit and blade

but the species differed in having a deeply furrowed stem, a shorter peduncle and a red rather than green spathe. Another collection, a *Spathiphyllum* is also possibly a new species.

Shortly after lunch, I left Cobán on a Pullman type bus that took me directly to a parking lot across from Hotel Santoña where Fredy was able to make a reservation for me. Never have I had it so easy getting from my bus to a hotel room. From there I was able to catch a taxi to the



**Mario
Esteban Vélez
Pérez**

Universidad San Carlos the next morning. I took with me my pile of herbarium specimens that I had made in Cobán and Luis Velázquez from the herbarium helped me put my material into the dryers. **Mario Esteban Vélez Pérez**, the Curator of the **Herbarium BIGU**, lives a long way out into the country but was the first to arrive in the morning. He remembered me from my last visit when a Guatemalan student, Julio Morales managed to find funds to bring me down to present a conference on the Araceae of Guatemala and one of the first Guatemalan Botanical Conferences in November, 2003. Mario Velez is an aggressive collector and works on many different groups of plants. His herbarium, largely owing to his efforts is much better than the nearby herbarium in

Edificio T-8 where the Department of Agronomy also has an herbarium. It took the entire day to get through the collections and to make determinations. I returned the



Juan José
Castillo

following day to work on the collections at the nearby **Herbario "José Ernesto Carrillo" (AGUAT)** at the **Facultad de Agronomía de la Universidad de San Carlos de Guatemala** which is curated by my friend, **Juan José Castillo**. He

contributed in the publication of *Anthurium guatemalense* Croat, Cast. Mont. & Vannini and is collaborating on the description of several new species. I had dropped into his office the preceding day because he told me that he had to leave at noon and I wanted to make sure I would be able to visit the herbarium the following day. He had brought to one of the classrooms about 10 living plants that he wanted to show me and he also brought more leaves of a specimen that Jay Vannini and I are naming, *Anthurium castilloi* Croat & Vannini. Juan José has living plants in cultivation at a property in the lowlands. I gathered samples from three different species among the living collections that Juan José had brought in for me to see in order to make descriptions later that evening in my hotel room.

The total number of herbarium specimens at AGUAT were not extensive so I was able to finish shortly after midday and the herbarium administration made arrangements for to visit the **Herbario USCG in the Jardin Botanico. Assistant Curator, David E. Mendieta** took me there in his car and later delivered me back to my hotel in a rainstorm so that was very convenient for me. The only herbarium that I missed on this trip was that of the **Universidad del Valle de Guatemala** and the **UVG Herbarium** which is located out on the edge of town. The herbarium had failed to respond to my inquiry about working there and I was not sure there was an active curator. In 2003 when I last visited Guatemala, the Curator at the time, **Ana Lu McVean**, brought me all the collections for my revision while I was attending the Guatemalan Botanical Conference and it was reported that the herbarium had not grown much since that time so perhaps it was not so important that I revisit it anyway.

❖ *San Salvador, El Salvador*

The following morning, I took a taxi to the Holiday Inn in Guatemala City where I caught the Nicabus to San Salvador, El Salvador. The bus drove through

mountainous roads for about an hour then descended rather low rolling hills. The border to El Salvador was easy to cross and the bus service did all of the waiting with passport stamping. I was prepared to exchange Guatemalan quetzal for El Salvador money but was surprised to learn that the country had switched to using dollars only, like Panama and Ecuador, so I had no difficulty making purchases there.

Upon my arrival in San Salvador, I was not sure where the herbaria were located but a man helped me find the address for the herbarium at the **Universidad Nacional de El Salvador (UES)** and I took a taxi directly to the herbarium but stopped along the way at the Hotel Happy to drop off my big bag. The Curator of the **Herbario**



Nohemy Ventura

ITIC was a woman named, **Nohemy Ventura**. She had replaced Edy Montalvo who had been the curator for many years but who had retired. The herbarium was not air-conditioned and was in part damaged

owing to insects. I was able to finish completely going through the collections to make determinations and confirmations before closing time and Nohemy showed me how to get out of the university by a pedestrian gate and where to catch a bus back where my hotel was

located. The bus was small and cramped and blared loud music on some bad speakers which made the whole bus vibrate. I was happy to arrive at the shopping center, made some grocery purchases and walked about 800 meters to the hotel.

I had made arrangements while at the ITIC Herbarium to go the **Museum of Natural History** to work at the **Herbario MHES** the following day. The Curator, **José Gabriel Cerén** was to pick me up at 8:00 AM at my hotel and take me there. When we arrived the following day, I was surprised to find that this herbarium was located in a large park-like setting, a former coffee finca that had been donated by a wealthy Japanese businessman. The herbarium is modern and air-conditioned, and is next to the administration building located in the massive coffee estate house with large rooms and high ceilings. We had lunch there with the Director of the Institute, **Eunice Escheverría**. One of the biggest surprises came when I first entered the herbarium to be greeted by someone who knew me. It was **Jenny Menjívar**, now the Coordinator of Natural History at MHES and a grass taxonomist that had spent two months recently at the Missouri Botanical Garden studying the grasses of



Jenny
Menjívar

Central America. Apparently, I had never formally met her but I remembered her well as the lady who was constantly moving grasses from Compactor A at the Garden and taking them either to the scanning room or to her work space along Compactor E. I recalled that she was often still working there when I attempted to shut off the herbarium lights at night. Jenny was marvelous and helped me out tremendously because she owned a car and it was in her car that José Cerén picked me up at my hotel and also took me later to another herbarium. Jenny also picked me up early the next day and delivered me to the Pullmantur Bus Company on which I had a reservation to go to Honduras.

The **MHES Herbarium** was relatively small but reasonably well curated and had excellent facilities including a dissecting microscope. I was able to finish up shortly after lunch and at 2:00 PM was driving in Jenny's car to **Jardin Botánico La Laguna** where the herbarium is located right near the front gate. The Curator of the **Herbario LAGU** is **Dagaberto Rodríguez** and the herbarium also employs another active botanist, Pablo Galán so the collection is well-managed and certainly the largest in El Salvador. In addition to collections made in

the wild, the herbarium has many collections made from the adjacent botanical garden.

I was able to finish revising the material in the herbarium by about 5:00 PM when people were anxious to leave. It was Saturday night and José Gabriel Cerén drove me back to the MHES herbarium in Jenny's car then Jenny drove us to an outside restaurant and bar where we spent a few hours enjoying beer before they took me back to my hotel. Jenny agreed to pick me up the following morning and take me to the Ticabus station for my trip to Honduras.

❖ *Tegucigalpa, Honduras*

Because it was Sunday, there was no direct bus service to Tegucigalpa so I took the bus to San Pedro Sula, the largest city in Honduras that is located near the coast and straight north of San Salvador. We departed San Salvador at 7:00 AM and reached Barberena just a little after 8:00 AM. Before long we arrived at the Honduran border, a lonely little-used outpost where I managed to get some Honduran money. Most of the way to San Pedro Sula we traveled along a road through the mountains that lie just north of the Guatemalan border. Most of the vegetation near the road had been removed and the area was

moderately dry with very depauperate stands of corn planted along the road banks but further up on the slopes the vegetation consisted of two species of *Pinus*. We arrived in San Pedro by about 4:00 PM and I went immediately to try to find a bus to Tegucigalpa. I had been in contact with **Lilian Ferruferino** who is the Curator of the Herbarium at both **Tegucigalpa** and **Zamorano**. She offered to come pick me up when I arrived in Tegucigalpa so I called her to tell her which bus I would be traveling on.

Lilian lives in a new house only 6 km from the **TEFH Herbarium** and I spent the night there. In the morning, **George Pilz**, my friend of many years and the Director of



Lilian
Ferruferino

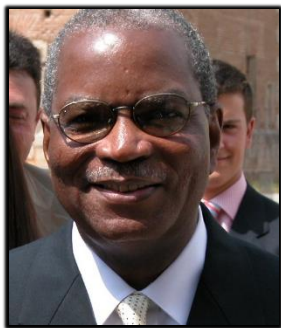


George Pilz

the herbarium at the **Escuela Agrícola Panamericana** picked me up at Lilian's home. The drive to Zamorano was pleasant on Sunday morning with little traffic. George had booked me into the Kellogg Center, the school's nice hotel operated by the agricultural school. The **Escuela Agrícola Panamericana** was founded by the United Fruit Company and still gets a substantial sum of money each year. The herbarium is one of the finest in Central

America but principally has collections only from Honduras. The collection was once curated by first class botanists including, Paul Standley (who's grave is in nearby San Antonio) and Louis Williams. For most of its existence, the herbarium was curated by Honduran botanist, Antonio Molina. As an aside, my friend, George Pilz, whom I had hired for a yearlong training session with funds from the National Endowment for the Arts Grant for Curatorial Traineeships in 1975 and 1976 and whom I visited in Ibadan, Nigeria during the summer of 1981, died of kidney failure on June 2, 2017.

On Monday morning, I took the school's shuttle bus directly to the **Universidad Nacional Autónoma de Honduras** to visit the **TEFH Herbarium** and spent the



Cirilo Nelson

rest of the day going through their collection. The herbarium is located on the top floor of the Science Building and is well curated. For many years, the collection was under the curatorship of another old friend, **Cirilo Nelson** who is now retired and living

in Spain. At the end of the day, I returned to Lilian's house by taxi. She also arranged for a taxi to come get me

in the morning about 5:00 AM. While the bus was not due to leave for Nicaragua until about 7:00 AM, I was advised to arrive there early though nothing happened for an hour. Eventually we got started and followed the same road out of town that had taken me to Zamarano. This is a heavily agricultural part of Honduras, more mesic than the lands further to the west along the Pacific Ocean where the lands are too dry for most crops and are devoted to poor pastures.

❖ *Managua, Nicaragua*

After crossing the border, we drove east along CA6 through rolling hills through Santa Clara, Ojo de Agua, then made a sharp turn to the right at Las Crucitas entering the N15 highway. This road was cut into the lower slopes of hills to the north that run along much of the country. At Jacaleapa, we made another right turn and again went south to the large town of Danli and proceeded south to El Paraiso and on to Ocotal. At Paraiso, the CA6 Highway was joined by the Panamerican Hwy, CA1. The Panamerican Highway does not go through the mountains of Honduras but instead take a route along the coast from San Salvador through Choluteca, a much faster route to Nicaragua and Costa Rica. As a result, that road has the

advantage of being mostly in the dryer parts of Central America along the Pacific Ocean where rainfall levels are comparatively low thus making it easier for road maintenance. South of Ocotal, the road passed through Estelí and San Isidro and finally Sebaco where I exited the bus. At Sebaco, the bus would go on to make another sharp righthand turn and then carry on south through Ciudad Dario and on to San Benito where it would begin skirting the southeast edge of Lake Managua, through Tipitapa and on to nearby Managua, the country's capital.

I was met in Sebaco which is a bustling town in the middle of an agricultural zone by, Don Esteban, a representative of an NGO run by an American woman, Angie Price. Don drove me to Matagalpa and took me to the main office and introduced me to the staff members. Angie is the Executive Director for an organization called, Sister Communities of San Ramón Nicaragua (**SCRUN**) in which local Nicaraguan families can get assistance with community development and educational opportunities. Angie is a good friend of one of my Missouri Botanical Garden Volunteer Research Associates, David Belt (a distant relative of the famous naturalist, Thomas Belt who had spent several years operating a gold mine in the country while he pursued his

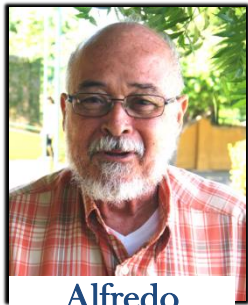
strong avocation of science (Belt, 1874). The following day, I went early to the bus terminal by taxi and headed off for Leon to find the first of the Nicaraguan herbaria that I would visit. My first objective was the **Universidad Nacional Autónoma de Nicaragua (HULE)**. The bus passed through rolling hills toward the Pacific Ocean, past a large area of mature woodlands before entering the suburbs of Leon. In the Leon bus station, we were met with a swarm of bicycle-powered “rickshaw-like” vehicles and I took one after making it clear that I could actually be taken to the National Museum. The skinny driver strained to pull me and my bag through the bumpy street. When we arrived at the museum, I learned that the herbarium was no longer even located in the National Museum and I was told that it had been moved to the botanical garden. After taking a taxi to the Jardín Botánico, I discovered that the herbarium was not there either. Yet another trip finally found me at the door of the actual herbarium where I was met by the Director,



Ricardo Rueda

Ricardo Rueda. I knew him well because he had gotten his Ph.D. at the University of Missouri in St. Louis and had done most of his work at the Botanical Garden. The herbarium was big and well-organized but I

found that I actually had already determined most of the collection since it was the place that Doug Stevens used as his base for the Flora of Nicaragua. Doug started the flora by living in Managua but after the year 2000, he moved his operations to the **Universidad Nacional Autonoma** in Leon. **Indiana Coronado**, who works at the herbarium, took me to my hotel and picked me up the following day to drive me to a place along the highway where collectors departed for the more or less hour long drive to Managua.



Alfredo
Grijalva

Much of the road to Managua was flat south of Leon but we passed through some low hills before coming into view of Lake Managua. The car stopped only meters from the front gate of the Universidad Centroamericana where a good friend, **Alfredo Grijalva** met me at the gate to the university. He is the Curator of the **HNMN Herbarium** and spent time in St. Louis during his graduate school days. Alfredo set me up with a place to work in the herbarium. The collection of Araceae was very well-curated owing to having seen much of the material as duplicates in St. Louis and the close collaboration we have with the Flora of Nicaragua Project. Everything went so smoothly and

after spending most of the day working with the collection, I got finished when Alfredo was ready to go home. Alfredo even drove me to the Nicabus Terminal which was not far away. The Station was not only conveniently located but had its own hotel right at the terminal. This was remarkably convenient because one only has to get up in the morning and walk a short distance to where the buses are departing for Costa Rica.

❖ *San José, Costa Rica*

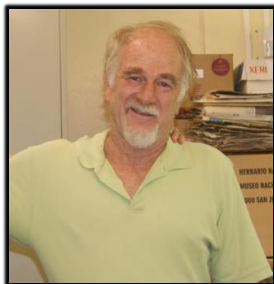
The trip to Costa Rica took a long time despite the fact that it is really not that far away. Our trip from Managua on the south shore of Lake Managua through Masaya and on to Granada on the NW shore of the larger Lake Nicaragua, took about an hour. But after picking up more passengers in Granada, the longer trek down through Rivas to the Costa Rican border along the margin of the Lake took nearly two hours. Border crossings are always a slow process for some reason and the passengers have to line up for both the exit stamp and the entrance stamp. I have never figured out why it takes so long to get fewer than 30 people processed. Eventually we were on the road to San José and I remembered back to my first few trips in the 1960's when the road was just a pothole-filled rock

road. Even today this dryer part of Costa Rica has scarcely any towns of consequence before reaching Liberia. It was in Liberia where I spent the night being sewn up after crashing into the back of a tractor which had an illegal bright white light on the rear. In a blinded condition, I slowed and made sure that I would not go into the ditch on the right. The crash put the tractor into the ditch and its two passengers (one too many for legality) came clambering out of the ditch while I laid bleeding on the pavement. I had crashed through the window cutting my face from cheekbone to cheekbone. In the hospital in Liberia, I spent the rest of the night being sutured by a Costa Rican doctor trained in Mexico. In the morning while waiting for some paperwork, I was presented with an infraction by a local policeman for hitting the tractor and was told to appear for a hearing before a judge in about a week's time. I just wanted to go home.

Fortunately, I was spotted by a local construction contractor who found me trudging away from the hospital with my bandaged head. He listened to my story and decided to befriend me. He volunteered to patch up the affair with the farmer, arranged for me to give my truck to the local police chief and carried me to the Nicaraguan border where he assumed I could get across the border

without my truck. The plan almost did not work because his friend that he assumed would help us did not even work for Customs but instead Immigration. Nevertheless, he managed to convince them that he would bring my truck to the border. I flew home to St. Louis from Managua the next day. On subsequent trips, I saw my crashed truck sitting in front of the local police station during the first two years. After the third year when I drove by, they had made an addition to the building and the truck was gone. No doubt it is was fixed up and is being used on some local farm.

We arrived in San José in a light rain at about 5:00 PM. I had been invited to stay with **Barry Hammel**, a Missouri Botanical Garden staff member living in Costa Rica. Barry eventually made it through the rush hour traffic and we went to his place out near Santo Domingo. Barry and I



Barry Hammel

spent the next two days working in the very large **INBio Herbarium** near where he lives. The herbarium was founded in 1989 and was built up over a relatively short time using parataxonomists trained to collect all forms of wildlife. It was a remarkably successful effort because thousands of collections were accumulated. Unfortunately, owing to lack of funding the

INBio organization was eventually closed down so when we were there, the place was essentially without staff. The INBio herbarium is the largest herbarium in Costa Rica, even if it does not have any old type specimens. It is officially now a part of the **Museo Nacional** where the **CR Herbarium** is located but they do not have funding to provide a building where they can incorporate both collections.

Since I had arrived in San José on a Friday night, it was nice that Barry was able to gain access to the INBio facility on Saturday. On Sunday, we could not get into INBio so I decided to take the bus down to Wilson's Garden in San Vito near the Panamanian border. It has a wonderful collection of living aroids, many of which are new to science and an herbarium collection of vouchers of many of the same species. I had contacted the Director of the garden ahead of time and they provided me with a room for my visit. This was a very profitable trip and I was able to get pictures and descriptions of several new species. I headed back to San José on Monday evening and worked at the herbarium at the Museo Nacional in downtown San José on Tuesday. The CR herbarium, while smaller than INB is old, very crowded and filled with

historic collections. It took the whole day and part of the next day to review them and make determinations. On the afternoon of the second day, we visited the herbarium at the University of Costa Rica in nearby San Pedro. This was the last collection (Herbario **UCR**) I visited in Costa Rica. The Herbarium is curated by, **Mario Blanco Coto** and is small by comparison to INBio and CR so it did not take more than a few hours to complete a review of the collection. While at the herbarium, I was able to meet, Marco Cedeño, a student at the University of Costa Rica who is doing his undergraduate thesis on *Monstera*. He has been doing a lot of fieldwork on the genus, especially studies with detailed life histories of all the species he finds. I agreed to have Marco help me with the *Monstera* treatment for Central America.



Mario Blanco
Coto

On Wednesday evening I visited, William Ramírez, a longtime friend who lives in Santo Tomas not far from where Barry lives. Bill is one of the finest biologists in Central America, a specialist with fig wasps which are so critical in the biology of the genus *Ficus*. He is also one of the greatest innovators in the science of apiculture. We both attended the University of Kansas and Bill and his

wife Carmen visited us while he was doing fieldwork in Panama. Though now retired for some years, Bill's intense interest in his research is still inspiring. Bill drove me to the bus terminal for my 11:30 PM departure for the bus to Costa Rica.

The bus did not take the historic old route through Costa Rica, through the mountains and over Cerro de la Muerte, the road I had taken to and from San Vito over the weekend. Instead, it went down toward Puntarenas and took the new coastal route, the Carretera Pacifica, which went through Santiago de Puriscal, Guapinol before reaching the coastal road. The Carretera Pacific passed through Quepos and Uvita before reaching the Interamerican Highway at Palmar Sur. It continued on to Piedras Blancas and Ciudad Neily and finally ended at Paso Canoas at the border. We arrived at the border shortly after dawn and spent nearly an hour getting back on the road again.

❖ *Panama*

The border crossing into Panama was less time-consuming than the border into Costa Rica from Nicaragua. Although the road has been paved for many years, the government of Panama has greatly modernized

the entire road from Panama City to the border and the route is in excellent condition. There is even a paved route from Chiriquí through the Azuero Peninsula.

Virtually the entire route was very familiar to me owing to my many years of work in Panama and my many trips from the Canal Zone to Chiriquí Province. I had made arrangements to stay with Jerry and Linda Harrison, friends who live on Cerro Jefe near the Panama City airport. They are biologists who spent their careers in Florida but retired to Panama where they spend their time studying the wildlife in that area. I had called Jerry about midway during my journey from the border and told him that I thought we would arrive on time. Unfortunately, our journey back to Cerro Jefe was during rush hour so it was not a quick journey.

When the Harrisons took me back to the city, I began working at the **SCZ Herbarium**



Carmen
Galdames

operated by the
**Smithsonian Tropical
Research Institute.** The
herbarium is modern and
well-organized, curated by



María de Stapf

Mireya Correa but managed principally by
Carmen Galdames, an ex-Chilean biologist who came to

Panama during the dangerous Pinochet Administration in Chile. Carmen has made many interesting aroid collections throughout Panama and I reviewed and determined them. Later that day, I went to the University of Panama to begin studying the collections there. The **PMA Herbarium**, curated by **María de Stapf** since the retirement of Mireya Correa, has an excellent aroid collection made all the better in



recent year by studies of Panamanian, **Orlando Ortiz** who has specialized on Araceae and has made collections of many interesting and new species. Orlando and I

[Orlando Ortiz](#) have been collaborating for a number of years on a variety of different genera. Despite the many years of work with Araceae in Panama, the country is still rather poorly known with many new species being described every year. The herbarium tour of Central America was completed with my studies at PMA. I had intended to go from Panama to Venezuela since I had been unable to study there on my South American herbarium tour but I was unable to get a visa and moreover, the place is politically unstable and even dangerous so I had to abandon my studies of Araceae in that country.

This last trip concluded my tours of herbaria where there are sizeable or important collections of Araceae. It resulted in thousands of specimens being determined, and thousands of specimens deemed not capable of being determined were carefully studied and photographed and these images were all labeled and uploaded into Tropicos for later study. The herbarium trip had been an incredible task and I visited 75 herbaria over the course of 18 months. These reports are filled with details which will be useful to other researchers who are planning trips to visit herbaria and the report will be circulated to all the institutions and curators who participated in the studies.

Literature cited:

Belt, T. *The Naturalist in Nicaragua*. 1874. University of Chicago Press.

Croat, T. B. & A. Acebey. 2005. New Species of Araceae from Bolivia and the Tropical Andes. *Novon* 15(1): 80–103.

_____. 2014. Catálogo de las Plantas Vasculares de Bolivia. *Monogr. Syst. Bot. Missouri*

Bot. Gard. 127(1–2): 1–1744. Araceae pp. xx–xx, In:
P.M. Jørgensen, S.G. Beck & M. Nee (eds.)

_____. 2015. Araceae, *In book*: Flora
de Veracruz, Chapter: Araceae, 1–211. Editors:
Gonzalo Castillo-Campos.