ON the morning of July 3, 1961, we arrived in Havana on the SS. Florida, ready to begin botanical studies in Cuba under the auspices of the University of Michigan Botanical Gardens. We had conceived the idea during the spring of '51, when we discovered that both of us were interested not only in the flora of Cuba in general but in the specialized flora of the Cuban pinelands in particular. During the previous year one of us (Jervis) had been at the U. S. Naval Base at Guantánamo Bay; experiences in botanizing in Oriente province during that year are recounted in the first number of the current series of the Asa Gray Bulletin (3). This experience was useful in preparing for the new trip. Jervis had learned the hard way that travel in Cuba may be really difficult at times, and had equipped his jeep with a hand-winched and a built-in cabinet (to protect specimens and papers) in the rear bed.

Our expedition at first seemed fated to die still-born, for it looked as if the officials at the Cuban customs office were not going to let us bring the jeep into their country. Their excuse was that the cabinet Jervis had so painstakingly built into the bed of the jeep made it a truck. This problem in semantics was resolved only after several days of effort, during which time an agent took papers around to the proper officials while we languished at a hotel in Havana, watching our money drain away rapidly. The moral was clear that next time it would be best to register the car with some agency like A.A.A., or else to know the right person in Havana.

Our sole compensation was the day we spent at the Colegio de la Salle (in the suburb of Vedado) talking with the dean of Cuban botanists, Brother León, and looking over his important herbarium of Cuban plants. León was a most gracious host and entertained us with flashes of real humor and perception. He told us some stories about that eccentric botanist Ekman, who has already become legendary in many parts of the Greater Antilles; and he was half-seriously indignant that Dr. McVaugh had not accepted his new genus Victorinia (segregated from Jatropha).

The financial debacle at customs cut short our plans for exploration in Pinar del Río. We wanted to go up into the country where the famous relict genus Microcycas grows, but at the town of Consolación del Sur we found that Sr. Manuel San Pedro, the authority on and protector of these rare cycads, had died. He had published an article with Dr. A. S. Foster about them (2), but we were unaware of it at the
time and could not find a guide. We turned toward the eastern end of
the island, promising ourselves to return; but as so often happens, we
weren't able to come back, and the famous pine savannahs of Pinar del
Río had to be left for some future expedition.

After a short stop in the dry scrub country on the serpentine hills
west of Matanzas, which we visited on July 11 and 12, we went on to
Cienfuegos, in the province of Las Villas. A few miles east of Cien-
fuegos at Soledad is the Atkins Institution, a tropical botanical gardens
and botanical research center administered by Harvard University.
We arrived unannounced late on the night of the 12th, but were gra-
ciously housed in the dormitory, Casa Catalina, which has a splendid
view of the Trinidad Mountains.

Friday the 13th we spent looking over the botanical gardens and the
books and collections of plants in Harvard House, as well as in talking
to Earl Smith, a forestry student who was interested in our expedition
to Oriente. We soon decided upon making a joint expedition to the
vicinity of Moa, a remote and little-visited area on the northern coast
of Oriente province. We were interested in making as complete botan-
cical collections as possible, particularly of the specialized pineland
flora, and Smith wanted to survey the hardwood forests which he under-
stood were being exploited by a lumber company at Moa. That evening
we talked with Dr. R. A. Howard, who had been to Moa in 1941 with
Brother Leon. He assured us that the area was well worth visiting.

So the three of us left the Atkins Institution Saturday morning, July
14, and drove steadily all day across the monotonous flat plains of
Las Villas and Camagüey, which have been in large part overrun by
"marabú" (Dicrostachys nitans), a pernicious leguminous shrub intro-
duced from Africa. We camped for the night between Holguín and
Mayarí, stringing our jungle hammocks between the jeep and a wire
fence. The next morning we knew we were really in Oriente, when a
few miles further across the bright green undulating fields of sugar
cane, dotted with thatched huts ("bohios") and royal palms, we saw
the great truncate, red-colored mass of the Sierra de Nipe, the west-
ernmost of the "mountains of iron". The paved road soon became
typical for Oriente; that is, it turned into a stretch of gravel and rock
more like a stream-bed than a road. It was a beautiful sunny day, and
we bumped merrily along, occasionally yelling "¡Adiós!" at the startled
Cubans who came out in front of their bohios to stare at our bright red
jeep, which, with the tarpaulin stretched over the huge mound of equip-
ment in back, resembled some strange kind of overgrown beetle.

At last we entered the town of Mayarí, more or less the last out-
post of civilization, where the road promptly became much worse than
out in the country. It was Sunday morning, and the town seemed re-
markably active and bustling. We finally discovered a place, looking
none too sanitary, where we could have "café con leche" and rolls.
After a fruitless trip looking for two jungle hammocks that had somehow fallen out of the jeep, we loaded on a good many bananas, pineapples, custard apples, and avocados (fruit being the cheapest food available) and succeeded, not without the usual confusion, in finding the unmarked "highway" that led out of town.

Near the Rio Cabonico we camped for the night, for the mudholes here were too formidable to cross with assurance in the dark. Smith and Webster found a small tienda, where they ordered "refrescos" and practiced their bastard Spanish on the two very courteous women who tended the place. It was a really beautiful Cuban moonlit night, marred only by the persistent mosquitoes and cows over-noisily chewing their cuds behind the spiny live hedge of Bromelia Pinguin. The silhouetted leaves of the royal palms shone a dark blackish green over the banana fields, and in the distance rose the mysterious and fascinating dark outline of the Sierra Cristal. The coming week seemed pretty sure to repay us for the trip's frustrations.

The next day we wound a snake-like path over the coastal rocky hillsides, having some difficulty in determining where the "main" road was, and sometimes ending up in a dead-end in a sugar-cane field. The scenery coastwards was often beautiful, particularly along Tánamo Bay, where low rocky islets covered with palms and other shrubbery met the bright blue water. But the coastal hills themselves, which once must have supported an interesting pineland flora such as we found further east in Moa, were denuded and either planted in sugar cane or left to grow up in grass. In many places only the royal palms, fortunately protected from cutting by law, had survived the destruction of the original vegetation. Only once was there any worth-while botanizing; Jervis found a beautiful pink-flowered plant of Caseria crassinervis, one of the several interesting ilicoid-leaved species of the genus which have evolved on the serpentine areas of eastern Cuba.

East of Cayo Mambí we crossed the Rio Sagua de Tánamo by a picturesque ferry which was just large enough for one car and which the boatman operated by pulling hand-over-hand along a cable stretched across the stream. It was a photogenic contraption, and we all took a number of pictures of it. Just beyond the town of Cananova we had to become highway engineers to fill in a formidable mud-hole, only to become bogged down around the next turn. Fortunately some Cubans obligingly pushed us out. As we had just left the last town before our destination, we picked up a hitch-hiker to show us the way. After passing over a few low hills, we came out on a plain with the Moa country stretched out before us. Our spirits picked up, for there were pine forests stretching back over peak after blue peak until all disappeared in clouds on the horizon. We shortly found that the forests were badly cut over, but at least they were there. We began seeing new plants all around us. Webster was delighted to see three very different-looking species of Phyllanthus, the euphorbiaceous genus which he
especially wanted to collect in Cuba, and further on, as we gained altitude, there were beautiful clumps of Euphorbia heleneae, a truly remarkable spurge (segregated in the genus Euphorbiodendron by Millspaugh) with shiny dark-green leaves and deep red bracts reminiscent of poinsettias but neater and more attractive. It would be a desirable ornamental for tropical gardens, unless its specialization for growing on soil with a very high iron content might possibly make it difficult to cultivate.

We began to have suspicions about our "guide" as the road became steeper and rockier and more untraveled. At first he had said that this was the only way to Moa, but later (after we had passed the last intersection where we could turn off) merely that it was the best. We went over the top of the Cerro de Miraflores, after having to stop again to fill in the road with logs and rocks, and entered the wooded country on the other side. Surely enough, as we had suspected, our guide lived near this road and had misled us purposely. We arrived at Moa at dark, and learned that we had passed by the overseer in Cayo Mambí, where he was waiting to catch a ride. His second in command took us to the guest house, where we unpacked and then went to the local restaurant for supper. The guest house, although not luxurious, did have plumbing, a battery radio, a tame parrot, and a "cocinero" who served us demitasses of Cuban coffee so we were quite comfortable during our stay there.

Moa turned out to have a lumber mill, a few tiendas and houses, and what was euphemistically called a "port", where the lumber was loaded onto barges. Near the port there was an open grassy space which served as an airfield. The single restaurant in town had something of the picturesque about it, but the novelty soon wore off. The menu consisted of vermicelli soup, rice, unbelievably inedible garbanza beans, some kind of meat, and "tostones" which are fried, starchy, indigestible green plaintains. There was usually, however, an entertaining dogfight going on under the table in the other half of the dining-room. We dined on the elite side of the restaurant, since our table had a table-cloth, and we suspected that they charged us twice as much as the everyday customers. At first we were suspicious about the water, and had an involved conversation with a boy who (we thought) knew a few words of English. Finally he understood us and said, "Of course it's good water; we get it out of the river!" Everyone had a good laugh at this, which put us in a frame of mind to become fatalists and we drank the water without worrying about it.

The next day (July 17) we were up early to have a cup of thick black Cuban coffee before taking the road towards Punta Gorda. For once we didn't worry about rain because there were no bad mud holes. The brick-red soil was covered with hard concretions of limonite, so that the road ran over a bed of iron. Halfway between Moa and Punta Gorda we investigated the vegetation.
Between the scrubby pines (Pinus cubensis) was an open scrub, in which Metopium venosum and Ouratea sp. were conspicuous, with a sparse understory of one or more species of Aristida. The Metopium, called "guao de costa" by the Cubans ("guao" being the generic term for poisonous plants), formed a rather attractive good-sized tree in places, and might be called the dominant hardwood species. The Ouratea is conspicuous from a distance because of the brightly colored bizarre fruits; the fleshy gynobase is a bright red and the carpels, which separate at maturity into fleshy drupelets, are purplish-black; the effect is that of a fruit turned inside out. The genus Coccoloba, which has a considerable development of endemic species in Oriente, was here represented by C. shaferi. In a shallow ravine where the scrub was thicker were a number of highly interesting plants, including a small magnolia-like tree which turned out to be Talauma minor, Siphocampylus patens, a rather common robust shrubby member of the Lobelia family with pale green flowers (and the only species of this family seen in Moa), and Anastrophia recurva, the only species seen in Moa of this interesting genus of composites which is endemic to Cuba, Hispaniola, and the Bahamas but with most of the species occurring in Oriente.

Scattered among the pines were clumps of Dracaena cubensis, which is in many ways the single most remarkable endemic species of Oriente. Its habit, rosettes of long linear-lanceolate leaves set on the ends of thin stems in the manner of feather dusters, make it a conspicuous part of the landscape. The Cubans call it "guñapo" and use it as a crude kind of soap; presumably it is the roots that contain the saponin-like substance (as in the yuccas of the southwestern U. S.), but we did not verify this point. Remarkably enough, the species was not scientifically described until 1942, when Marie-Victorin published an interesting article about it (6), pointing it out as an ancient floristic relic of African affinities. The only other species of Dracaena known from the New World is D. americana of Central America, which has a tree-like habit very different from the Moa plant. Marie-Victorin considered the Cuban Dracaena to be most closely related to D. Draco, the famous "dragon-tree" of the Canary Islands, and suggested that it was one of the remnants of the flora of an ancient land mass connecting the Antilles with Africa. It may be remarked, however, that Dracaena or a close ally (in the form of the "genus" Pleomele) is represented in the geologically recent Hawaiian Islands by several species, and we can scarcely invent a land-bridge to carry it there. It would probably be better to regard Dracaena as one of several "island-hopping" genera such as Lobelia, Plantago, and Vaccinium, which have been especially successful at long-distance dispersal. Even so, the Cuban Dracaena remains phytogeographically a very interesting plant.

Pressing on towards Punta Gorda, we arrived at the Río Yagrumaje,
which turned out to be the most attractive locality we visited around Moa. We parked the jeep by a tremendous *Furcraea* with an inflorescence ten meters high, crowded with bulbils. The stream-bed itself was really an enchanting place. Upstream from the road the cool water ran over dark serpentine rocks, forming deep crystal-clear pools that were ringed about by the dense vegetation. Except for some bothersome biting flies, it was a good place to go swimming. Along the banks the *Cyrillaceae*, represented by *Cyrilla racemiflora* (the same species as in the southeastern United States) and the attractive-flowered *Puridaea moaensis* Marie-Vict. were conspicuous, along with *Pitcairnia cubensis*, a terrestrial bromelioid with racemes of crimson flowers, a *Tabeuia* with white catalpa-like flowers, and, less commonly, a handsome straight tree with beautiful rose-tinged glossy flowers and shiny green leaves, *Bonnetia cubensis*. Occasionally a number of bright green-and-red parrots would come squawking through the tops of the pines which covered the hillsides above the stream. Even more so than the rest of the Moa country, the landscape of the Río Yagurumaje arouses contemplation of the passage of geologic time during which the streams of evolution have produced the strange medley of vegetation that surrounds the looker. One cannot help feeling that he is in a remarkable outdoor museum.

We decided that this was collecting enough for the day and turned around towards Moa. We were surprised on reattaining the Río Cabañas to find that it was now a huge roaring muddy torrent, and that the bridge we had passed over that morning was out of sight. All the heavy rain that we had seen up in the hills that morning seemed to have been funnelled into the Río Cabañas. But as the Cubans forecast, it went down so rapidly that in a couple of hours only a few inches of water were pouring over the bridge and we were able to cross. Back at Moa we found that Smith had also had a pretty profitable day, having been up in the hills with a lumber-truck. He had been caught in the rain, and had a good many stories to tell.

The next day we had planned to split up the same way, but as Smith’s ride did not materialize, he, as well as a member of the Guardia Rural, went along with us. This time we planned to go as far east as we could, to the mines of Cayoguan and perhaps even to Cañete, where (we heard) another mining project was opened. We went into Punta Gorda on the way there, to drop off our hitch-hiker and buy some food. The view above the town was so striking that we all had to stop and take pictures of it. It would have been a revelation for a sociologist or geographer; nowhere had we seen nature exert a more compelling influence on a town. Everything was colored red by the dust: trees, roofs, and even the steeple of the church. In the background the deep brilliant blue of the Atlantic came up to collide in a surf-line of color. There was a port here also, where trucks from the mines up the valley of the Cayoguan came down with chromite ore. And to prove that this
was the most important community in the area there was a station of the ubiquitous Guardia Rural, who seemed to be a sort of Cuban synthesis of policeman and storm-trooper. We found that shopping in the business district was none too good; the chief commodity available besides Coca-Cola and rum was a vile-looking kind of salted fish. Since rum was only ten cents a bottle, it was easy to see why so many Cubans regarded it as the best investment.

From the coastal bluff on the side of which Punta Gorda was built you could not only look down to the dock but also east to the delta of the Cayoguan, where there was an extensive growth of mangroves. We drove on in this direction, promising to pick up our Rural Guard on the way back. In a few kilometers we came down into the lush valley of the Cayoguan. One branch of the road crossed the river and went further east; the other continued upstream toward the mines. The flora here was quite distinct from that of the Río Yagrumaje; although there were pines on the ridge-tops, they were replaced below by a forest of tall straight hardwoods with Euterpe and Bactris palms and lianas that were either Marcgravia or aroids. In places a dense undergrowth of a bamboo, Arthrostylidium, made walking a real effort. The flora was the closest to that of a tropical rain-forest that we had seen, for besides the lianas, such trees as Clusia rosea were conspicuous. However, it seemed here to be mostly second-growth, judging from its jungle-like undergrowth and monotonous composition, and we did not find the collecting of any sustained interest. The mining town of Cayoguan was more interesting than the flora, for it was the most primitive-looking village we saw in Cuba. Nearly all the houses were thatched bohios, and the scene suggested what a village in the South Sea Islands might look like.

We tried the other branch of the road but soon ran into a ford that looked too deep to cross with assurance, so we returned to Punta Gorda. Our hitch-hiking friend was nowhere to be seen, so Smith and Webster went up to the Rural Guard post to ask his whereabouts. Some linguistic confusion immediately arose, and an interpreter had to be brought up from "downtown" in the shopping district. The "jefe" of the post seemed somewhat suspicious of what these Americanos were doing in the area, and Smith and Webster had visions of being put up in the local jailhouse. But when all was made clear the chief naturally decided that plant collectors must be harmless, and everyone parted with friendly hand-shakes. Our friend, it appeared, had already caught another ride back to town; we never knew why no one told us that in the first place.

As it was, we got back to Moa in time to take an excursion to the coastal plain near the port. Here was the type locality of Acacia Bucheri, a monstrously spine-armed tree described and illustrated by Marie-Victorin in 1944 (7). Jervis collected some seeds which later germinated beautifully at the University of Michigan Botanical Gardens.
The spininess has gone so far in this species that the seedling plants are armed with large spines from the first node above the cotyledons. Marie-Victorin suggested that the resemblance of A. Bucheri and the similar A. Daemon from western Cuba (and Sierra de Nipe?) to some African species might, as in the case of Dracaena cubensis, indicate African affinities in the Cuban flora.

Thursday, July 19, Jervis returned to the coastal plain area near the port while Smith and Webster took the jeep and a guide and drove inland to a place called Cayo Chiquita. This was a comparatively small "island" of hardwoods in a valley surrounded by pinelands on the higher slopes. The practice of applying the epithet "cayo" to such isolated areas of hardwoods is rather common in Oriente, and has its analogue in southern Florida, where the limestone outcrops running southwest of Miami are known as the Everglade "Keys". Smith was interested in surveying the area for such economically important trees as the jucaro (Bucida Buceras). As it turned out, the botanical aspects of our excursion, while interesting, were the least exciting. Our guide, a black, loquacious Jamaican, led us from where we had parked the jeep to a cornfield at the edge of the forest, and we were starting to go into the forest itself when we were surprised to see a large black-and-white bird sail majestically past and disappear into the tree-tops. Smith recognized it as an ivory-billed woodpecker, and we devoted a few seconds of silence to commemorating the occasion. The guide pointed to a dead tree in the middle of the cornfield and said that that was where the bird stayed (why it should have picked the most exposed spot in the neighborhood was not clear). He told us that we could attract the bird by hitting the trunk with the blade of a machete to make a ringing sound.

The mesophytic forest was full of ferns, epiphytic orchids, and the same liana (a Maragravia) which we had seen in the valley of the Cayooguan. The number of woody species here was large and it was not clear whether or not the complex composition of the forest was the same as along the Cayooguan. After coming out of the forest we waited for a while in the cornfield, hoping that the ivory-billed woodpecker would return. It never did, but we were rewarded by seeing a trogon, whose red, white, and blue colors made him a truly regal-looking bird, as well as great flocks of green-and-red parrots that carried on aerial riots and screeching tree-top arguments. With Smith's binoculars we had a ring-side seat at this fascinating performance. The Moa parrots seemed to be in no immediate danger of extinction, for we saw them commonly elsewhere, often right along the roads. Nearly every house in Moa seemed to have one for a pet.

We marched back to the jeep feeling well satisfied with our hike, only to discover that someone had broken into the cabinet built into the rear bed of the jeep and had stolen all the bedding, as well as a knife, poncho, and tarpaulin. Our Jamaican guide didn't help matters
with a completely incoherent story about some dishonest character who lived in a hut down in the valley. Back at camp we told Jervis and the others the bad news, and our friend the Rural Guard went to work on the case.

As the afternoon was not yet spent, Jervis and Webster went down to the coastal terrace near the port, while Smith took the jeep off to investigate another small hardwoods "cayo". The chief attraction of the port area was the small grove of Acacia Bucheri already described. However, the low xerophytic scrub nearby was also very interesting. It was composed of at least two species of the by now familiar and decorative genus Tabebuia, a remarkable shrubby Jacaranda with the blue flowers of the familiar cultivated species but with very different xeromorphic leaves, several Melastomaceae and Myrtaceae, Casearia ophiticola, like many of the ilicoid-leaved Casearlae with extremely variable foliage, and a few orchids, including a Vanilla with thick fleshy green stems that sprawled along the ground. In some shallow seepage pools were two species of Utricularia (U. juncea and U. pusilla) and two sundews (Drosera capillaris and D. intermedia). All of these except Utricularia pusilla also grow in the United States, and Drosera intermedia incongruously seemed just as happy here as in the bogs of western Newfoundland.

Friday Smith went out on a truck which was bound for the "Gran Tierra", the local name for the Moa Range, about 15 miles inland. Jervis and Webster took the jeep back towards Cananova on the coastal road that our guide had refused to let us take on the way in. We stopped only a few times at first, for the pineland to the west of the lumber camp had been terribly devastated by fire and cutting. Then we came to the turn in the road where we could look down from the plateau (at an altitude of possibly 100 meters) onto the coastal plain, which was covered with two kinds of palm savannah. Beyond the lush green lawn-like expanse of the moist savannah to our right was a line of scrub along the shore, then the blue water of the Atlantic, and finally a narrow key or sand bar lying a few hundred yards offshore. Unfortunately we didn't have time to investigate this interesting-looking area of apparently moist savannah, as the road ran to the west of it across a more xerophytic area.

We descended from the plateau and came out into an area of grey-brown soil, quite unlike the red soil on the uplands, which supported a dry vegetation dominated by Copernicia rigida. The landscape had a park-like aspect but the vegetation would have to be classified as "charrascal", or scrub, since between the palms was a dense tangle of grass and xerophytic shrubbery. It yielded a number of interesting plants, including a very attractive purplish-flowered Jacaranda, the familiar Casearia ophiticola, and Phyllanthus orbicularis. This last, widespread on serpentine areas in Cuba, is a low intricately branched woody shrub quite unlike the annual or suffruticose species of
Phyllanthus in the United States; it belongs among the serpentinicolous xerophytes of the section Orbicularia, which has its center of development in eastern Cuba. Although interesting as an example of the evolution of the micro-sclerophyllous habit in Phyllanthus, it was soon eclipsed when at a stop a mile or two down the road, Jervis was puzzled about the identity of a very attractive pink-flowered shrub he had found. We were both surprised to find that it was another Phyllanthus (P. comosus), and we could understand why Britton had so summarily (but unjustifiably) made it the type of his new genus Roigia.

We soon reached the fork in the road where our guide had led us astray, and took the road toward the Cerro de Miraflores again. While stopping for lunch under the pines on the foothills, we could not help taking pictures of Euphorbia heleneae, which here made a brilliant display of dark red and green. No less striking than the color of the plant was its behavior when cut, for a copious stream of latex spurted out under considerable pressure. We could not recall any other spurge as highly charged with latex.

The view from the upper slopes of the Cerro de Miraflores could hardly be called beautiful; the landscape was waterless, the trees sparse, the soil rust-colored and rocky. But looking westward out over the pineland on the slopes, the palm savannah down on the coastal plain, the thickets of trees in ravines, to the forested heights that off in the distance near Sagua de Tánamo rose to become the Sierra Cristal, one could not help being impressed by the atmosphere peculiar to this country. Directly in the foreground the bizarre green pompons of the Dracaena testified that a remarkable history was locked in these silent hillsides. Here we were standing on the core of the Greater Antilles, the ancient solid rock upon which much of the endemic flora of Cuba and Hispaniola must have developed. Perhaps since Jurassic times these mountains of iron have been the citadel where the especially characteristic groups of the Antillean flora have survived and evolved. Much as man has modified the scene, the country retains its primeval character. Since Columbus looked upon this strange coast in 1492 nothing much seems to have happened, and it is hard to imagine that these hills may some day be denuded like those closer to Mayari.

Saturday, July 21, was our last day of field work in the Moa country. We had intended to let Smith have the jeep, but he caught a ride towards the "Gran Tierra" in a lumbering truck. We went up the same road afterwards with two of the Guardia Rural who said they had some information about our stolen equipment. We parked near Cayo Chiquita and after a few minutes of searching they discovered our gear neatly wrapped up in the tarpaulin. Everyone was happy, and we were only too glad not to bring charges against the thief, since we didn't want to get entangled in any legal complications. We took our passengers back to Moa and bought them beer, and then drove back out the road
toward the Gran Tierra. On the way, we found Smith and his guide and took them along. The road wound for miles through the hills, passing over some areas of a brilliant green stone we hadn’t seen before, becoming cruder and cruder all the way. Finally, on one hill-top it stopped and was continued by a horse-trail which led over the crest of the Moa Range in the direction of Santiago.

We were unpleasantly surprised to find that the country back in the interior had been terribly devastated by fire. The primeval forest we had imagined on the Gran Tierra turned out to be an El Dorado. Webster hiked along the trail for a few kilometers, seeing mostly barren hillsides covered with grass and that tiresomely ubiquitous fern _pteridium aquilinum_. Along the side of one peak, however, he found a few remnants of the original vegetation, including _Casearia opipicola_, a small melastome with a wine-colored velvety hypanthium that turned out to be _Calycogonium pauciflorum_, and a _Phyllanthus_ with bright pink flowers and leaves which were at first dark red, later becoming yellowish underneath. Müller Argoviensis had well named it _Ph. erythrinus_; it could also be named _indomitus_, since it was springing up luxuriantly from charred stumps.

On the way back to the coast, we stopped for a while on a high ridge at approximately the type locality of _Phyllanthus chrysanthus_, a striking species with revolute leaves which were bluish-green above and bright golden-yellow beneath. It had been described by Dr. R. A. Howard only four years previously. Associated with it were a number of other interesting pineland species, the most arresting of which was _Scaevola Wrightii_, which is restricted to Oriente and is the only endemic species in the New World of this principally Australasian genus. The development of _Scaevola Wrightii_ presents an interesting parallel to the evolution of endemic _scaevolas_ in the Hawaiian Islands. The similar parallel development of _Dracaena_ has already been mentioned, and the presence of endemic genera of _Malvaceae_ (_Kokia_ and _Hibiscadelphus_ in Hawaii, _Atkinsia_ in Cuba, _Ulbrichia_ in Hispaniola, and _Montezuma_ in Puerto Rico) is also suggestive. Apparently certain groups of plants, for reasons not yet understood, have a special tendency to insular endemism. The parallel development of superficially similar taxa may easily occur in widely-separated insular areas by natural selection, as is perhaps illustrated by the similar species of _Plantago_ in New Zealand, Hawaii, Juan Fernandez, and St. Helena. The similarity of _Acacia Bucheri_ to some African species may possibly be explained in this way, without resorting to the hypothesis of direct Antillean-African land connections.

Back at camp, Jervis and Webster returned to the port area for one last look, and Jervis discovered what seemed to be a patch of virgin pine forest in an old cemetery plot. After supper we went over to the boiler shed and got down the presses, which we had set up to dry just as Marie-Victorin and other visiting botanists had done. Back in the
guest house we worked until late ordering up the collections of plants, while a battery radio played wild Cuban music interspersed with outbursts of passionate oratory. As usual, there was also an audience of interested Cubans whom Smith interrogated about important hardwoods with remarkably effective use of sign language and gestures.

The next morning we got up to find it raining, and on this inauspicious note we said our goodbyes, filled up the tank of the jeep at the company gas pump, and left the Moa lumber camp for the last time. We felt much indebted to the officials of the lumber company for their generosity in receiving us without any previous warning and for the courtesies they extended during our visit. The rain had stopped by the time we came out on the plain near Cananova, so that we could take a good look back at these fascinating mountains of iron. To west, ahead of us, were the Sierra de Cristal and Sierra de Nipe, but we were fated not to reach them. We drove on to Mayarí, thence to Santiago, where we said goodbye to Smith, and then to Guantánamo Bay, where we recouped our forces for an excursion along the south shore of Oriente. Eventually, in the hilly region called Altos de Farola about 20 airline miles south of Baracoa, we found a number of the familiar Moa plants such as Scaevola Wrightii and Dracaena cubensis growing on similar serpentine ridges. The flora at Moa, then, extended at least in part clear across the eastern "snout" of Oriente, but we found no areas which furnished as rich collecting as that at the Rio Yagrumaje.

We had actually collected only five days in the Moa region, and had to be content with a superficial survey of the vegetation and flora. The lack of ecological information in this paper may perhaps be excused by the fact that we had almost no previous knowledge of the flora of the area. A serious ecological survey of the region would be of great interest, particularly from the standpoint of studying the adaptations of the serpentinicolous vegetation, as well as comparing the rain-forest of the Cayoguan valley with the typical lowland tropical rain-forest.

The Moa country is far from being the least-known area in Cuba, but the richness of the flora will make it a fascinating collecting ground for many years to come. Charles Wright, who collected extensively in Oriente from 1856 to 1867, visited Baracoa on the east and La Catalina (near Sagua de Tánamo) on the west, but never reached the Moa country proper. At Baracoa he did, however, collect many species described by Grisebach which have since been found to the west.

The first botanist to reach this part of Cuba was John A. Shafer, who collected extensively in Cuba for the New York Botanical Gardens in the years 1909 to 1911. He made two trips to the Moa area, first in February, 1910, and later in late December, 1910 and early January, 1911. He wrote short accounts of both trips (9, 10). Some of his
localities, from which many new species have been described, are
given on the map accompanying Brother León's article on botanical
explorations in Cuba (4). The intrepid Swedish botanist Ekman began
his explorations in 1914 in the Sierra de Nipe and later explored the
Sierra Cristal and the country west of Baracoa. He never reached the
Moá vicinity proper, but again many new species described by Urban
from his collections have since turned up in the Moá region. Juan T.
Roig, an enthusiastic Cuban botanist, visited the region in the late sum-
mer of 1917 and wrote a short report which appeared in the same
issue with León's article (8). Mr. and Mrs. George Bucher, who were
hosts to botanists visiting the Moá lumber camp, themselves collected
in the 1930's.

In 1941, Brother León, Brother Clemente, and Dr. R. A. Howard
visited Moá, and Leon wrote a short article on the trip in the same
year (5). In 1942 and 1943, León, Alain, Clemente, and Marie-Victorin
collected extensively in this region as well as in the Sierra de Nipe.
Alain published a short report on the collecting in Moá in 1946 (1), but
the publication of Marie-Victorin's account of these travels, to be
issued as the third volume of his "Itinéraires Botaniques dans l'île
de Cuba", has been delayed because of his untimely death in 1944.
The title of this paper has been suggested by what we understand is
to be the title of his forthcoming book, namely, "Mountains of Iron".
That publication, we trust, will cover this subject in far greater de-
tail and scope than we have.

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Fig. 1. The village near the mines in the valley of the Río Cayoguan, surrounded by tropical rain-forest.

Fig. 2. Charrascal vegetation dominated by *Copernicia rigida* and *Sabal*, near Playa de la Vaca.