

SMITHSONIAN-BREDIN CARIBBEAN EXPEDITION

1959

Diary of Richard F. Darsie, Jr.

March 29, 1959

Had breakfast in Columbus Hotel, Miami, packed and left for 20th Street, new Miami International Airport at 1000. Checked bags and shopped at terminal building. Pan American Flight 433 was scheduled to leave at 1130. It was actually airborne at 1210. Flying at 17000 ft. airspeed 315 mph. At 1300 we reached NE tip of Cuba and followed along its eastern side until 1410. Just before reaching Cuba, the ocean water changed from a deep blue color to light turquoise. Pilot told us that we were passing over the Bahama shelf. At 1330 we left the shelf and water was again deep blue. Weather was clear except for few white clouds. Red streaks could be seen in water at times probably Dinoflagellate blooms, according to Bill Amos.

Reached NW tip of Haiti at 1420 where according to Miami Herald of this date a severe draught was causing serious starvation. Then we went out over Gulf of Gonaives. Landed at Port au Prince at 1450. At airport natives hung over fence to try to sell us native souvenirs such as bongo drums, baskets and jet black, native pottery. Temperature 90°F. On airport were parked American AT-6 trainers and P-51 fighters. Also many cattle egrets were on grass between runway and apron. Children at end of runway had that "how could anyone have enough money to fly" look. Native huts had thatched roofs and no fresh vegetation was apparent. Mountains were 8700' high in Haiti. At 1525 passed over Lake Enriquillo 144 ft. below sea level. There were well defined roads visible from air but no cars travelling there. Lake Enriquillo is in the Dominican Republic.

Looking north along coastal range we have passed a series of mountain valleys. Houses in these valleys only. Passed a peak 9200'. Landed at Ciudad Trujillo at

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1600 and left at 1620. Sky overcast airborne 1622. Before arriving at Curacao, the plane was sprayed with an insecticide in aerosol form. Aerosol contained 1% Pyrethrins, 3% DDT, 5% Cyclohexanone, 4% Petroleum Distillates, 2% lubricating oil (SAE30), and 85% inert, called "magik mist" made by Knapp Monarch Co., St. Louis. Aerosol was sprayed at 1745. Sun setting at 1755. Arrived at Willemstad, Curacao at 1800.

Very dry looking Island. A large oil refinery very much in evidence; could see cactus and range cattle. Their time was 1/2 hr. later than Eastern Standard Time.

Mailed cards at Curacao but terminal stops were closed because it was Sunday. Gave cards to Pan American clerk to mail. Airborne at 1830 EST. Could not buy cards at this stop. It was dark as we were flying toward Caracas. Airport which services Caracas is Miquetia. Landed at 1940 EST. Went into terminal building. Our names were paged as we waited in customs room with all other passengers. We were in transit so were led to a waiting room where there was a lunch counter. Having had only a snack at 1700 we each were served, standing at a counter, a 12 oz. can of Hearts Delight peach nectar and a toasted cheese sandwich. Another in transit passenger was a Spaniard travelling in South America and the Islands representing a Swiss watch manufacturer. We stood outside the terminal and watched a turbojet British plane in Avensa Lines warm up and take off. Very noisy. We boarded the plane and were airborne for Port of Spain at 2017 EST. Plane was disinsecticized at 2135 EST. Landed at 2210 EST and were met by Henry Fleming and Joselyn Crane from Simla and Dr. & Mrs. Arthur Greenhall from the Victoria Museum, Port of Spain. After going through customs, we went to a club nearby and listened to steel band music while we had a night cap. We all piled into Greenhall's

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Vauxhall and drove into town. Their two teenage children were along too. Alice was 16. We checked into the Bretton Hall Hotel and were lodged in rooms in cabins behind main building. We were equipped with private bath and additional sink in bedroom. It is for brushing teeth and drinking water and has only cold water faucet. The room has a radio but no cooling devices other than open windows on three sides. Bed at 1215 EST.

March 30, 1959

Arose at 0730 and had breakfast in hotel dining room. Hotel manager is Mr. Huggins, graduate of University of Maryland, class of 1928. In Queens Park children were flying kites about 8" - 10" square with bow and very long thin tail. Talked with negro father who was flying kites with children. The kite has frame of native fibrous wood which he gave me. The body is made of tissue paper reinforced by pasting paper on ends, over wood. We also talked about our countries. He immediately brought up integration question. I assured him that in my State, schools were integrated. He talked of foreign policy and excellence of John F. Dulles and of communism. He was not sure whether communism or capitalism was best. He showed me one of his three children who had a hair lip. To my surprise he had had a corrective operation. At Hotel I had one traveller check changed into BWI money. Rate of exchange \$1.00 U.S. money equals \$1.65 BWI money. They would only give \$1.65 for U.S. dollars in cash because currency has to be sent back to States and the \$.03 paid insurance charge for shipment. Called Thomas Aitken, Medical Entomologist with Trinidad Virus Laboratory. He has cold so could not see me today but will pick me up at 0545 tomorrow and I will accompany him on field trip to obtain blood from nestling birds.

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Had lunch with Dr. Arthur Greenhall, his wife and Paul, his 11 yr. old son, also Miss Tana Maylin of the U.S. Information Office in Trinidad. We went then with Greenhalls to see the Royal Victoria Institute Museum. Met Mr. J. A. Bullbrook, associate curator, who is a geologist and archeologist, employed by oil firm. He does his curatorial work in his spare time; an old man, perhaps 70 years old. He gave each of us a reprint of "The Meaning of Archeology". He showed me a Lepidoptera collection made by a local amateur entomologist. They are all in Ricker mounts in a cabinet built for this purpose. In the museum proper they have biological and industrial arts exhibits. Dr. Greenhall, who gets only a partial salary from this activity, made a plea for 5000 insect pins (4000 #3's and 1000 #7's) and cork enough to cover the bottoms of 36 insect drawers, 17" x 19". The possibility of assistance must be investigated through the University of Delaware research fund. The museum is housed in an old brick building about the size of Recitation Hall.

We were invited to have cocktails with Consul General and Mrs. Robert G. MacGregor. He is the ranking American diplomat in the BWI Federation. He has been here only several weeks and is a temporary official to be replaced next July. His permanent station is to be Kingston, Jamaica. He was recently transferred from Belgian Congo. Their home is on the side of a hill overlooking the city of Port of Spain. It was a beautiful sight as we sat on the patio as the sun set over the Gulf of Paria and the harbor. We could see the entire city from our vantage point. The consul has a sizeable office building in downtown Port of Spain. He had saved a patent leather beetle for me which had been caught upside down on the porch during the night. The Greenhalls were along and kindly provided the transportation. They brought us back to the Hotel and joined us for roast lamb dinner. Then Dr. Schmitt and Tom Bowman went off for another cocktail party given by some local dramatist whom Elizabeth Greenhall knew. She works for a publicity agent in town.

March 31, 1959

Met Dr. Thomas H. G. Aitken, medical entomologist for the Trinidad Virus Laboratory, Port of Spain, which is supported in part by the Govt. of Trinidad and in part by the Rockefeller Foundation, at 0645. He had a regular weekly fieldtrip scheduled for this day to collect blood from nestling birds for virus isolation study. Before we left the lab he showed me adults of some of the insect parasites found in the nests. The most common is an Anthomyid fly of the genus Philornis. Larvae of this genus show a wide range of parasitism, from none at all, living only on fecal material, to feeding on birds in nests and leaving the host while not feeding, to staying on bird host all the time. He is making a complete collection of haematophagous arthropods of Trinidad and Tobago. He showed me Tabanids, Simuliids, and Ceratopogonids. He leaves chloroform tubes with certain natives around the island and they catch and save flies which bite them or their domestic animals. We were joined by Dr. Edward Belle, a negro native from British Guiana (down here they refer to it as B. G.), Ph.D. in parasitology from McGill University, Montreal, Canada, and a driver, Mr. Singh, whose favorite expression was "yes, Docta". We drove east to Sangre Grande, where we picked up another Indian who was in charge of the "cooperators" in that area. Out farther we picked up a second native. These men spent full time hunting for the bird nests and keeping track of the development of the nestling birds.

On the way out Dr. Aitken told me that they had isolated St. Louis encephalitis virus from wild caught Culex coronator, Culex caudelli, Psorophora ferox and Culex spissipes. Ilex encephalitis virus was isolated from P. ferox, Aedes scapularis, Aedes serratus and Culex taeniopus. In 1954, during the yellow fever outbreak, they isolated this virus from wild caught Haemagogus spearszani 22 times. This species is the most common forest canopy species.

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He also said he has a good problem for anyone interested. He routinely collected bird nests from the sites of the blood survey after the nestlings had left. The nests were brought to the laboratory, run through the Berlese funnel, and all animals, which came out, preserved. He has quite a lot of these collections and no time to work on them. He no longer saves the nests.

The first nest was located in a citrus grove at the El Reposo Govt. farm. It was a "sugar bird" nest. Dr. Belle exsanguinated 0.1 cc of blood from the heart and added 1 cc of saline to it in a tube, after making a blood thin smear. Measurements were made of wing and tail feathers as indexes of growth, then the "chord" measurement from elbow joint to tip bone in wing.

Dr. Aitken pointed out some cocoa plantations as we went to the next stop. He showed me the large "immortelle" tree (Erythrina) in among the shorter cocoa trees, which serve to shade them and make them grow better. These plantations used to be highly malarious because the immortalies were loaded with epiphytes (Bromeliaceae) which held and bred Anopheles bellator, the vector. He pointed out that in looking for mosquito breeding in these Bromeliaceas, one should punch them with a stick first to scare any snakes, chop them off gently, chop off the tops of the leaves to provide a smaller area for pouring, then pour the water into a basin.

We visited next the Vega de Oropouche Govt. operated cocoa propagating station. It had a 200' square enclosed on sides and top by screen wire, plus an open air head house. The Venezuela house wren (Troglodytes) had built a nest on top of one of the roof supporting pipes. Two wren nestlings and a cow bird nestling were bled. I climbed up on a 1000 gallon tank and took a picture of the station. We also saw a tanager's nest but the nestlings were too small to bleed.

March 31 continued

We went on to the last nesting site which was near MP 2 1/4 on Vega de Oropouche Road. Here we saw 5 nestling little brown doves from two nests in palm trees. I photographed a match wood tree (Garaton), which had a very slender trunk about 30' tall and a clump of leaves only on top.

We went on to the end of the road to visit the Rio Grande Forest where Aitken had a canopy study setup. The boss native left us at the last nest site and returned to Sangre Grande, and we let the second helper out about 1/2 mile from the last nesting site, where he had some mosquito collecting to do. Aitken had that whole area covered by native collectors checking for mosquitoes at various places including chicken-baited stable traps. It is a virus endemic area.

After arriving at the end of the road, we walked for about 1/2 mile through tropical rain forest, predominantly in mora trees, Mora exelsa. They were very tall, some 200 feet, the last remaining virgin timber on Trinidad. The area was being logged, so the monkey population was moving out. At his study tree, which was 150' tall, he had built a ladder to a level of 95', having collecting platforms at 25', 30', 75' and 95'. I climbed to the top, hoping to collect some Haemogogus adults, but none were found. At the 75' level, I collected three darkling beetles. Dr. Aitken told me that at 75' and 95' they had taken 2 species of Phenionia, 1 of Sabethes, and 1 of Haemogogus. Practically nothing was collected at 25'.

We returned to Port of Spain at 1200. Dr. Aitken had a severe cold and was not feeling well but took the trip anyway. He wants a list of the species of mosquitoes which I collect in Tobago.


April 1, 1959

I was picked up at the Bretton Hall Hotel at 0800 by Dr. S. F. Chen, malarialogist for the World Health Organization working on malaria eradication in the British West Indies Federation. Dr. Chen stopped for gas. I was surprised to hear on the Station radio the daily obituary notices just as one could read them in American newspapers.

At the headquarters, I saw about 100 drums of dieldrin concentrate for residual spraying. They are having formulation difficulty with this dieldrin. It is mixed with a wetting agent called Marasperse, which imparts a brownish color to the final formulation. Malathion also is naturally brown. Both these materials leave a brownish color when sprayed on the walls for malaric control, which the natives object to. They have been caught washing it off, white washing the walls, or papering over them to hide the dirty color, the next day.

There were 500 cases of malaria in Trinidad in 1957, 350 in 1958 and 18 cases so far in 1959. The anopheles vectors in Trinidad are Anopheles hemanulius, An. aquasalis and Anopheles bellator. Majority of the cases were transmitted by the last named species. Since this species breeds in the Bromeliads, copper sulfate is used as a herbicide to kill them. They had a 1000 gallon tank spray truck which is used for this purpose. They can treat only 500 acres per year and it must be repeated every 7 years. At this rate it would take 40 years to wipe out the Bromeliads from Trinidad. According to a map on their wall the 1957 cases were distributed as follows.



Most of the malaria
is just south of the northern
range 

April 1 continued

Doctors are required to submit blood smears to this Laboratory on all suspected malaria cases. They receive from 100-150 slides per month. There are also 38 evaluators of malaria control programs working out of this place. They survey human blood for presence of parasites. They collect about 10,000 slides a month. There are technicians examining the blood smears for parasites, and their monthly capacity is 8000 slides per month. On Trinidad 95 percent of the cases are Plasmodium falciparum and the other 5 percent, P. vivax.

The islands of Trinidad, Tobago, Grenada, St. Lucia, Dominica and Jamaica have malaria eradication programs which are directed from this headquarters. This program is tripartite; the World Health Organization supervises and evaluates, the UNICEF supplies the equipment and insecticide, and the local government administers the program.

Their laboratory includes both yellow fever and malaria. Dr. Chen told me that filariasis is all over the Caribbean area, and its principal vector is Culex quinquefasciatus. This disease was brought to the region by the Orientals. In Surinam (Dutch Guiana) there are 60,000 Javanese who were responsible for the spread of schistosomiasis in that country.

I met the entomologist who works with Dr. Chen in the evaluating of the malaria eradication program. His name is Mr. Huibert Van Severter and he was a parasitology student of Dr. Swellengrebel in the Netherlands. I saw him only a short while because he had just come from his Fort of Spain home where he had run out of domestic water. He was going out to buy water and hire a water truck to take it to his home and fill his storage tank.

Dr. Chen's address is c/o Malaria Division, P. O. Box 556, Port of Spain, Trinidad, BWI.

April 1 continued

In the p.m. we moved from the Bretton Hall Hotel aboard the yacht "Caribee" which was our home and laboratory for the next 35 days.

April 2, 1959

Left yacht Caribee at 0800 for Trinidad Virus Laboratory to secure a collection of Trinidad haematophagous insects from Dr. Thomas Aitken. He had vials of mosquito species which he had reared, saving them for visitors like myself. It was necessary to mount them on points because they were brittle and dried. He also showed me his mounting technique. He recommends for the tropics Duco cement, diluted 50% with amyl acetate. Tom was interested in my ectoparasite recovery technique. I explained it but promised to send him the reference when I got home. He gave me a homemade table, on request, which was in his office. I had nothing aboard ship on which to work. It is 18" x 30" x 30". He showed me his colony of Trichoprosopon digitatum and gave me a dozen 4th instar larvae which I preserved. The females oviposit in cocoa pods containing water.

Dr. Aitken joined me for lunch aboard the Caribee then we went down to the Imperial College of Tropical Agriculture (hereafter referred to as ICTA). He wanted to procure some horseflies to take with him to USA where he was going next week. He gave me a good collection of representative Trinidad Tabanids.

At the college I visited with Lecturer in Zoology Michael Sasley and Research Entomologist Michael Breese. The entomology curriculum consists of a year of general Zoology, a year of general Entomology and a year of Economic Entomology. Their department head is Dr. _____ Kirkpatrick. He was ill and I did not meet him. The college offers a two-year course leading to a degree of "associate" of the ICTA. They have two Americans, one graduate of Maryland State College and one graduate of Washington State College. They do not now give a degree equivalent to a baccalaureate but expect to begin soon.

April 2, continued

Their College is divided into teaching and research and presently it is primarily a vocational agriculture institute. No subjects other than agriculture are offered. They do give one year of preparatory training for students who have had too poor pre-collegiate training.

The College research program is divided into four major areas of interest or "schemes":

1. Sugar Research Scheme-financed entirely by the sugar industry.
2. Banana Research Scheme-financed in part by industry.
3. Cocoa Research Scheme - financed about 60% by industry.
4. Soils Research Scheme - with no industrial financing.

This branch is divided into soil surveys of BWI islands and soil research.

Other research work on smaller scale is called a "unit".

The most notable of the units is the Seismology unit. Entomology has only one unit. That is in stored products insects. Dr. Breeze is working on pests of stored rice. He has no regular project assignments, just works on as he likes.

My host Mr. Emsley showed me around the campus where I had a chance to photograph interesting tropical trees and the College buildings. He took me to his house for tea about 1700, then took me back to Port of Spain. From there I took a taxi to the Trinidad Yacht Club where the Caribee was anchored.

April 3, 1959

Returned to the Trinidad Virus Laboratory again to mount more of the mosquitoes. It was interesting to note that these adults were stored in vials which contained

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about 3/4" of naphthalene flakes and a piece of blotter over that. I was able to get 38 species of Trinidad mosquitoes this way.

Dr. Aitken sent me out to the Caribee in one of their trucks so I could transport the table conveniently. I went around via the Beethan Highway to get a picture of "Shanty" town and the black vultures (Corasyps atratus) on the city dump. I also stopped at the Royal Victoria Institute Museum to pick up insects given to me by Dr. Arthur Greenhall, Director.

Before leaving the Virus Laboratory, Dr. Aitken showed me a collection of urticating insects which he is making. He had Automeris spp., Rothschildia spp. (called locally "Macaque").

Dr. Aitken told me that he had pupae of Toxorhynchites violaceus which had never been described. I suggested that perhaps I could do this sometime.

I arrived back on the Caribee at 1430 and we sailed for Tobago at 1530.

April 4, 1959

Dropped anchor in Sandy Bay at Tobago at 0715. The overnight trip from Trinidad had been rough and not much sleep was the result.

We prepared for our first field trip and were put ashore at Crown Point near the Crown Point Hotel at 0900. We picked up two negro boys on the beach, George Arnold and Nestor Grant, to help carry our gear. We engaged a taxi to take us as far up the Roxborough-Parlatuvier Road as possible. On the way we stopped at the boys' homes to change their clothes.

The trip from Crown Point to the place where we left the cab was about 30 miles. Happily I found that all roads and traces (paths through the forest) were

April 4 continued

marked with mileposts. We walked up through road construction - they are constructing a hard surface road from Roxborough to Parlatuvier over the mountains. It will take 5 years to complete.

We did our first collecting up a small stream which was running. I collected fish and crustaceans as well as aquatic insects and mosquito larvae and adults. I found a pool along the stream which had Culex larvae.

Back on the main road we collected along it. I found larvae in a pool made by rainwater in auto wheel ruts; also in flower bracts of the Heliconia, a plant resembling the banana and in the same family. I netted a large snout beetle which was flying.

Up the stream in the dense woods I caught a snake, called locally a "horse whip". I believe it is Oxybelis acuminatus, a long thin climbing snake.

One tree I was warned about was the manchinelle, the sap of which will blister your skin. The species is Hippomane manchinella.

April 5, 1959

Stayed on board Caribee during the morning to organize the collections made yesterday.

In the afternoon went with Dick Cowan and Tom Bowman over to Pigeon Point to a mangrove swamp. On the way I collected termites. The mangrove trees are 60' tall. There was no mosquito breeding found in this area.

Received permission to operate a light trap at the Crown Point Hotel. Patrick the maintenance foreman at the Hotel helped me hook it up. The manager, Mr. Ted Gomes, was very cooperative.

April 6, 1959

First thing in the morning I went over to the Crown Point Hotel and picked up my mosquito trap and collection. At 1000 we set sail for Man of War Bay at the NE end of Tobago. We arrived there at 1700. It is said that English Admiral Nelson hid his entire fleet from the French in this bay. On the trip our fish line caught a 25 pound wahoo or Kingfish, which we were served several times subsequently. Very tasty.

After anchoring, Cowan went into the village of Charlottesvillie to call the Bird of Paradise Hotel at Spayside where a friend from ICTA was vacationing. The gentlemen, Prof. Robin Forster, wanted to make a field trip with Cowan on Tobago. He returned reporting that some of the townspeople were very unfriendly to him, despite the fact that he had no camera with him. The day before Bill Amos had tried to photograph some nude children in the same village and the father became very indignant and raised quite a commotion about it, but no violence resulted. It was explained to us afterwards that the natives do not want to be photographed (1) unless you ask them first, and (2) unless they are dressed up in good clothes. They also expect to be paid for posing.

In the morning, Prior to our departure for Man of War Bay, I spent from 0630 to 0930 on Buccoo reef with Schmittz, Amos, Nicholson and Finlay. We were called for by Mr. Dillon, a native from Buccoo village with a very substantial native boat. Parts of the reef were exposed because of the lowest tide of the month and we looked for specimens under the coral rock. Most abundant were various kinds of brittle stars, sea urchins and crabs.

My legs were exposed too long to the sun and they were red and sore for the next few days.

April 7, 1959

Cowan and I met Prof. Robin Forster of ICTA at 0715 along with Conrad Carasco of our crew to help carry collecting gear. We rode in Forster's car to the top of Back Hill where he parked the car and we started walking up the Pigeon Hill Road toward Pigeon Peak, elevation 1600'. I collected mosquito larvae from Bromeliads, cut ends of bamboo, Heliconia, cocoa pods, and Arceasee plant (Elephant Ear or Tanya). On this road we saw at close range the corn bird or yellow tail, which is the size and color of an American crow, except that the lateral feathers of the tail are bright yellow.

On the return trip down from Pigeon Hill, I stopped to see Mr. Charles Turpin, local estate owner, at 1300, for permission to operate light trap at his home. He gladly gave us permission and Mrs. Turpin invited us to tea when we would bring the trap up in the evening; I accepted.

I spent the afternoon working on the live mosquito cultures and at 1600 I went up to Turpins accompanied by Art Merseresu, deck hand on the Caribee, who carried the trap. We discovered that his "Delco" generated 36 volts which would not operate the 110 volt trap. So we disconnected the motor and left it as a light trap without benefit of the motor. We had to use one of their light bulbs, 50 watts, connecting the electric cord directly to the light socket. We left the 1/4" mesh wire covering in place to exclude the large insects.

After having tea with the Turpins we returned to the Caribee about 1900 in the dark.

April 8, 1959

The *Caribee* was scheduled to return to Sandy Bay for more work at Buccoo Reef. Cowan and I decided to drop off at Bloody Bay and walk from Parlatuvier across the Island to Roxborough and engage a taxi to take us back to Sandy Bay. Thomas Bowman decided to accompany us on this trip. He is invertebrate zoologist at the U. S. National Museum.

We arose at 0500 and at 0530 Schmitt, Mersereau and I walked up the hill to Turpins to get the trap. We returned, had breakfast and prepared for the day's collecting trip. About 0830 we hit the beach at Bloody Bay. There was a banana steamer anchored in Bay picking up bananas and cocoa from a warehouse ashore. We found a farmer, Carleton Roberts, who was going three miles up the Roxborough-Parlatuvier Road and offered to show us the way. A Trinidadian from the boat walked along (with only Jockey shorts on) as far as Parlatuvier. He was looking for cigarettes, so I gave him one of my cigars. At Parlatuvier we picked up two interesting natives, who were accompanying Roberts to his "farm". They were Lowellyn Thompson, the local Agricultural agent, and Mr. Batiste, the ward officer. As we went up the hill Cowan walked with the Agricultural agent and I walked with the ward officer, while Roberts led the procession. Batiste, a fine young man with an infectious smile, asked me some searching questions about the future of the West Indian Federation. How could they become prosperous like the USA?? The agricultural officer showed us native mango stock to which he had grafted the improved Julie Mango. He showed us the local custom of planting the red colored plant, dragon blood (*Cordyline terminalis*), to mark the dividing line between estates. He has been teaching the natives contour cultivation on the steep slopes. Both of these officers

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were very nationalistic in their attitude and were looking to the day when they would be independent of the United Kingdom. We passed several branches of the Erasmus River, then branches of the Bloody Bay River farther up the mountain. The agriculture officer told us that the Forest Reserve has 141 inches of rain annually. Mosquito larvae were collected from leaf filled pool, Heliconia flowers, Bromeliads, slow moving streamlet along side of road, palm spathe; other insects were collected along the trace. Bowman carried the butterfly net and collected insects, including a beautiful Morpho butterfly. One time he was so energetically chasing a butterfly that he fell down the side of the mountain about 20 feet with a crash. In the process he lost one cyanide jar, except for the lid. He was not hurt.

When we reached the crest of the mountain, we came to the point where we had collected on April 4, the first day on the island, so we moved on faster. We reached the road building operation which was two miles from Roxborough about 1530 and Cowan was anxious to reach that point before 1600 to inquire about mail. We asked if a construction truck was going to town and it was so we hopped on. After stopping for petrol we started a wild ride, in which the driver was obviously trying to scare the white passengers. We made it to the post office in time and after mail check, a bus bound for Scarborough pulled up, so we rode it back. The fare was 72¢ each, BWI. A taxi took us out to Sandy Bay, a distance of 8 miles from Scarborough. We had walked about 9 miles, of which at least 6 had been uphill, although the trace from Parlatuvier had been so constructed that the ascent was fairly gradual. The bed felt very good that night.

April 9, 1959

Stayed aboard all day working with mosquito cultures and mounting or preserving insect specimens collected the previous day.

In the evening at 1800 I returned to the Crown Point Hotel with the New Jersey mosquito light trap and set it up for operation again.

April 10, 1959

Left the Crown Point Hotel anchorage in the morning with Cowan and Conrad Carasco, steward of Caribee, as helper. Our taxi transportation took us to Mount St. George where we turned off north on the Mt. St. George-Castara Road, then we got out and walked along the trace to the top of the ridge in the southern end of the Tobago Forest Reserve.

On the ride up we followed the Hillsborough East River and passed the Hillsborough dam which supplies water to Scarborough. The hillside below the buildings at the dam level was very nicely decorated with plants spelling out Tobago.

As we proceeded along the trace I collected four lots of mosquito larvae in the first quarter mile in Heliconia, Bromeliads, and cut bamboo. Butterflies of the genus Heliconias were collected between mp. 4 1/2 and 5. We collected along the Hillsborough East River near MP 5. I found and collected Gerrids. At one spot near there a root string was stretched across the trace and some bird dung had fallen on it and hung there. Several large black ants were feeding on this mass. I collected them. Near MP 7 1/2 I found a pool in a rock ledge, leaf filled, it contained larvae of mosquitoes and beetles. The most prolific breeding in Heliconia flower bracts anywhere on the Island was discovered at the top of the ridge near MP 7 3/4. Many were collected for subsequent rearing.

April 10 continued

From a rotten log near MP 7 1/2, I dug good series of beetle larvae, pupae, and one adult. Also was stung on right middle finger by scorpion found in the log.

We met the taxi on our return and were driven back to the Sandy Bay via Easterfield Road and Northfield Road. This took us past the Government House where the Governor of Trinidad & Tobago stays when he is on the Island.

One interesting point about the trace, it followed for a long distance on the level along the main tributary of the Hillsborough East River; when the trace finally left the river and we started up the mountain, the land became very dry with a peculiar soil type. We gradually left this scene when we reached the rain forest.

April 11, 1959

Stayed aboard and worked with mosquito cultures and mounted specimens captured the previous day.

April 12, 1959

This is the last day on Tobago. Cowan and I left the Sandy Bay anchorage at 0845 for Hermitage where we planned to collect once more up the mountain into the Forest Reserve. The Caribee expected to sail up to Man of War Bay, on which Hermitage is located, and pick us up on the beach that evening. We had some difficulty persuading the taxi driver to take us beyond Parlatuvier since the road was rough, though dry. We were instructed to stop at the home of Mr. Patrick, the caretaker for the Hermitage estate, which we did, and arranged to return at 1700 to be shown the trace to the beach.

April 12 continued

We followed up the Hermitage River for about 1/2 mile, passing through a nearby cocoa grove where I found more Trichoprosopon breeding in cocoa pods. Unlike the other pods I had collected from, these were freshly opened, not dried. We left the river and proceeded through a hillside banana planting and up the ridge to the south, very steep slope. We entered the reserve beyond the banana (and cassava) planting by cutting our way with machetes. As we got to the edge of the reserve, cutting through thick brush, on a tree was a sign, "Forest Reserve". On up the ridge I collected soil from the buttress of a "Balata type" tree of family Sapotaceae to bring back for Bowman to check for invertebrates.

Mosquito larvae were found in a little water in the butt of a palm frond, in water in a palm spathe, and from Heliconia flower bracts.

I found one rotten log which was particularly rich in Coleoptera immatures and adults. One great disappointment was chopping a beautiful, large, iridescent-green Scarab beetle in half with my machete. I collected soil samples for Dr. Schmitt at approximately 1000 and 500 feet above sea level.

In the Hermitage River we collected crustacea and fish. One species of fish had a ventral sucking disc so it could cling to rocks in fast moving water.

After descending from the climb we enjoyed a bath in the river. Then we called on Mr. Patrick again who treated us to a green coconut apiece. The native who procured the coconuts and cut them open for us was disappointed because we had no American cigarettes for him. He showed us the path to the beach, where we found a boat building industry. The beach was stony with quite a surf except in the extreme western end which was sheltered by a cliff. The Caribee arrived shortly and Desmond brought the skiff in to pick us up.

We weighed anchor at 2000 from Man of War Bay heading for St. Lucia. The prospect was a 30 hour trip.

April 13, 1959

Spent the day aboard the *Caribee* en route from Tobago to St. Lucia. While we were on the lee side of the islands it was quiet enough to work on my cultures. As we passed St. Vincent the Captain slowed down to give me more time. He turned around at one point, and the ship became snarled in the tricky winds and the jib was badly ripped.

The first island we sighted in the morning was Canouan in the Grenadines. We passed Savan Island and Petit Moustique. We passed between Petit Moustique and Moustique to the lee sides of the remaining islands. Next was Quatre, Beque, St. Vincent, then St. Lucia.

The first view of St. Lucia was the famous Pitons, Gros Piton and Petit Piton. The former is 2619' high and the latter, 2461'.

We arrived in Castries Harbor at 1900. As soon as we arrived in Castries and were cleared by the Harbor Master, Desmond Nicholson and I went ashore taking a New Jersey Mosquito light trap to a home, known to Desmond. We took a taxi to the home of Comdr. Charles D. Milbourne, Fairview Gardens, Castries, 790 feet above sea level. The trap was hung on a tree in his garden, which was very beautiful. It started operating at 1945.

April 14, 1959

The previous evening we had arranged with Comdr. Milbourne to take Cowan and me to the mountains to collect. For a price, he and his adopted negro son, Randy (20 years old) acted as our guides this day. Randy came aboard the *Caribee* at 0700, having had breakfast on a neighboring yacht and we left at 0730, picking up the Comdr. on the way. We travelled out the Castries-Deanery Road for 10 1/2 miles

April 14 continued

to the main ridge of the island, called the Barre de L'Isle. On the way we passed an area where a whole village had been covered by a land slide in 1936, killing over 300 people. The place is called Ravine Poisson. It had rained every day for 40 days.

When we reached the Barre de L'Isle, we found a trace following along the crest of the ridge. We walked along it for about 2 miles in a southerly direction. We collected several butterflies along the highway and trace; Randy used the net part of the time. I found mosquito larvae only in one Bromeliad of a dozen examined. Insects were dug from several rotten logs. I also collected a very interesting grasshopper. Comdr. Milbourne was interested in collecting native orchids for his garden. Cowan cut down a small tree on which were several orchids growing from a mass of root-like structures. As they were cutting this off, a beautiful grasshopper with orchid eyes and orchid and green wings jumped out. Its antennae were 3-4 times longer than the body.

We had eaten a lunch prior to collecting on the trace. When we returned after the hike on the trace, Cowan set about collecting a sample of fruit from a tree of the genus Armosia. The bean-like fruits of the tree were black and red and about twice the size of our kidney beans. Not finding a smaller specimen, Dick climbed up on a hill along the road and cut off a large limb over hanging the road. Knowing that the branch would fall on the road, we watched for traffic to prevent the limb from falling on a vehicle. Just as it fell a loaded bus from Castries came around the corner and had trouble getting stopped as the limb crashed. We worked like beavers for a while chopping up the limb to clear the road. Afterwards I picked up a bag of the beans to take home. The beans are used by the natives to make jewelry.

April 14 continued

The Comdr. and Randy were invited to spend the night aboard the Caribee so when we were through collecting we rode back toward Castries till we came to the Castries-Soufriere Road. We turned south till we came to the trace going over the hill to Marigot Bay, where the Caribee had sailed to during the day, about three miles south of Castries. We parked the car in the yard of a negro family and walked over the hill. Marigot Bay is a beautiful, quiet spot. The shore drops off so sharply to deep water that the Caribee could anchor close to shore and tie up to nearby palm trees. After the hot walk, a swim was a welcome relief.

The trap had been left connected at Castries and I arranged for someone at Comdr. Milbourne's home to turn it on this evening. There was work to be done on the cultures and mounting and preserving the day's catch that evening.

April 15, 1959

Stayed aboard most of the day working on mosquito cultures and mounting insects. We moved from Marigot Bay to Castries, leaving at 1000 and arriving at Castries at 1100. We went ashore to shop and at 1200 Dr. Schmitt and I took a taxi up to Fairview to bid farewell to Comdr. and Randy Milbourne and pick up the trap and catch from the previous night. On the return we stopped at a Club called the Seven Seas, where yachtsmen habitually gather in Castries, had some refreshment and returned to the ship.

In the early morning Comdr. and Randy had left the ship and walked back over the hill to pick up their car.

In the afternoon we sailed on up to Pigeon Island, anchoring in Gros Islet Bay. It is 8 miles north of Castries, a small offshore island near the northern end of St. Lucia.

April 16, 1959

Cowan and I left the Caribee at 0850 for a field trip from Gros Islet, St. Lucia, north. This is a very dry part of the island. We went through thorny scrub bush on our way to a distant hill which we hoped would be forested. After trying to find a short cut, we were forced back on the road by the thorny underbrush. We walked through the Cap Estate, where we saw some very modern machinery at work harrowing the soil. The estate was in the hands of the U. S. Govt. during World War II and an army base was located there. We walked up Mont du Cap at the north end of the estate. We found black top roads and a water line going up the hill with fire plugs, at intervals, made in Philadelphia. At the top of Mont du Cap were the remnants of the army base. At the very top was a gun emplacement for the very large coastal artillery. The base must have been 50' in diameter with a rim bearing a massive gear ring.

The Cap Estate had recently changed hands and the new owner, in addition to clearing the land, had cleared the brush from along the water line going up the hill. There was a series of ponds with water in them but no mosquitoes found. Undoubtedly they were for the stock ranging there.

The area was rich in Lepidoptera and I spent time collecting butterflies. My prize specimen was a black and yellow swallowtail in perfect condition, collected on top of the Mount.

We walked back down through a banana planting and called in at the estate house for water but no one was there. We inspected the ruins of a fort, or fort-like structure but could find no information on it. We returned to the ship about 1300 and spent the afternoon working on cultures and mounting the day's catch.

That evening we had dinner as guests of the ship's captain at Josset Legh's Cabana.

April 17, 1959

We left very early in the morning for Fort de France, Martinique, where we stopped for several hours to shop and take on stores. We sailed out again about 1500 for an overnight trip to Roseau, Dominica.

In Fort de France we called on the American Consul then Nicholson, Bowman, Schmitt, Cowan and I called on Dr. Blanche, Directeur du Service de Protection de Vegetaux, Service de l'Agriculture. We told him of our individual interests. He presented Dr. Schmitt with copies of the local scientific society proceedings. We talked of the Pasteur Institutes of the West Indies and French Guiana. He knew Dr. Floch, medical entomologist at Pasteur Institute de Guyane Francaise.

April 18, 1959

Arrived at Roseau, Dominica, at 0900 after overnight sailing from Martinique. The city was not as modern as those of Castries and Fort de France. With Desmond Nicholson as a guide we went ashore (Cowan and myself) to try to make arrangements for an overnight trip to the east side of the island and especially to the high interior mountains. Our taxi driver, Jimmy, took us to the Agriculture Department headquarters at the Botanic Garden where we tried to locate the forester, Mr. Hill. He was out of town and no one else could give us the information about forest trails and parts of the island to visit, so we decided to call on the Island Administrator, The Hon. H. L. Lindo. At his office we were told that he could see us in 30 minutes. In the meantime we went to see the Chief of the Island Police, Lieutenant Colonel B. B. Humfrey at Police Headquarters nearby. We told him our mission and tried to secure his help in getting transportation and overnight accommodations on the east side of the Island. He suggested stopping at Salibia where they had good visitors

April 18 continued

accommodations. We asked about Castle Bruce and Rosalie. He had one bed available at Castle Bruce and prospect of borrowing a cot. The walk from the end of the passable road was about 6 miles. We decided to go to Castle Bruce if transportation could be arranged. Lt. Col. Humfrey was leaving for seven months leave and has a son in Toronto, Canada, who graduated from Oxford. We called on Mr. Lindo who was very gracious to us and had his assistant calling for a "drive it yourself" car. While he was doing this the administrator excused himself and went out telling the assistant not to make final arrangements until he returned. When he came back he had arranged for transportation by a Public Works Department vehicle. He charged us \$10.00 BWI for the use of an English Land Rover, Diesel Powered version of the American Jeep, which he personally collected. We were pleased for the same service by commercial taxi would have cost \$50.00 BWI. After thanking him profusely we visited the Lands and Surveys Department and bought the latest Dominica map for \$1.00 BWI. We returned to Lt. Col. Humfrey's office at which time he gave us a chit of introduction to the Castle Bruce Police Station. At the same time he bade his assistant, Sgt. Phillips, to try to call the station and appraise it of our arrival.

I was interested to learn that the administrator was an Englishman, native of Jamaica and a former Rhodes Scholar to Oxford.

We returned to the ship at 1100, having made plans to leave at 1300, and packed our collecting gear and provisions for three meals. We ate an early lunch and went ashore to meet our car and very competent driver, Sampson. ~~We~~ We left Roseau and drove NW along the coast to the Layou Valley Road and inland to Pond Casse. We stopped at one point, about 11 miles from Roseau, to collect. I found two very productive bromeliads; while aspirating water from one of them I sucked a frog into my jar.

in the car furnished by the Public Works Department
"Land Rover" with a very competent driver, Sampson.

most generously
arranged for by the Hon. H.L. Lindo, the Island Administrator
and

April 20, 1959

Sailed from Dominica to Montserrat. Left Dominica at 2000, April 19, and arrived at Plymouth, Montserrat at 1200. The island looked very different from the others because the land rose gently from the sea at least around Plymouth, for quite a long distance before the mountains rose steeply. This land was all cultivated, and appeared in good condition.

At 1300 we went ashore. Dr. Schmitt wanted to meet Mr. Peter Lake, Island Development Officer, who had some information about fish poisoning. As I understand it in some areas, especially around Redonda Island, the ocean floor contains large amounts of copper which the fish accumulate in their bodies. Eating these fish causes poisoning to humans.

One interesting incident happened on the dock at Plymouth, when we landed, there was an American on the dock. He introduced himself as Dr. V. V. Bowman, of the ICA program there. He was a former USDA Marketing specialist and was there helping to develop markets for the vegetable crops grown in Montserrat. He said that a plane load of carrots was leaving the next day for Puerto Rico. They also grow tomatoes which he is interested in. We didn't have time to get his full story.

Cowan and I went to see the Forestry officer about the possibility of returning between April 28 and May 3 to collect on the Island. We were met by Mr. Jeffers, the Agricultural Officer. He engaged a taxi to take us to see the forester, Mr. Howes. Mr. Howes was ill with flu but the plan was to drive to his house and ask if he is well enough to talk to us for a few minutes. Cowan brought a plant press ashore and we stopped at the Island agriculture station where we left it. We went several miles north of Plymouth to Mr. Howes country home. He is native of Montserrat of European extraction with a Canadian wife. We had an audience at his bedside. He told Cowan that a Jamaican botanist, Cooper Proctor, had recently spent three months on the island. He told me that the island seemed to be particularly rich in Hymenopterous fauna.

April 20 continued

He reviewed which parts of the island should be visited and offered to accompany us. The usual place for scientists to visit is Chance's Mt. on the S end of the island. On the return trip we stopped at a stream called "Runaway Gut" which Mr. Jeffers said had a superstition attached to it. If you tasted the water you will return to Montserrat. He produced a glass and we each had a drink. We ended our trip at Fox Bay, where we had arranged to meet the Caribee. The sand on this beach was black but fine and good for swimming. The waves were high so Desmond brought our bathing suits and we changed into them and carried our clothes at arms length out to the dinghy, then stayed for a swim in the waves. The marine biologists were collecting ghost crabs on the beach, which they claimed were much darker than the same species found on white sand. I finally swam out to the yacht, a distance of about 200 yards. A group of teenage youngsters, school class, was having a picnic on the beach.

We had dinner there and left that night for Barbuda.

April 21, 1959

Arrived in Barbuda about 1100 and anchored off Codrington, the only town on the island. This island looked very different from the others we have visited because it was low, the highest point being 205', and dry. The island approach was different too, for beyond the coastal strip, only about 100 yards wide, was a large lagoon, 1/4 mile wide and 7 miles long. The vegetation of the island is serophytic, such cactus and agave plants.

The captain went on the island to get clearance to land our party but the warden of the island would not give it to him because we had not gotten clearance from Antigua, the Headquarters from which Barbuda is governed.

April 21 continued

He refused the Captain permission to use the government radio to call Antigua and get the permission over the air. Our only recourse was to sail back to Antigua and secure the proper permission. This was exasperating for it meant losing two days collecting. After lunch we weighed anchor arriving in St. John's harbor, Antigua, at 2200.

April 22, 1959

After lunch we went ashore in St. Johns. The Caribee was anchored far out in the harbor and the outboard motor would not work so we had to row all the way in to the dock. We went first to V. E. B. Nicholson & Sons, St. Johns Office, where we met Desmond's brother, Rodney; with whom we made travel arrangements for the air journey home. We then went on up to the Administrator's office to secure permission to land in Barbuda. While waiting to see him we bought maps of Antigua but there were none of Barbuda for sale. The administrator, Mr. Ian Turbett, was apologetic, but claimed the incident was due to his not knowing exactly when we were to arrive. He showed us a letter from the U. S. State Dept. announcing our plan to visit both Barbuda and Antigua. Dr. Schmitt had provided our State Dept. with a proposed itinerary of the trip and the Islands to be visited were notified officially.

The administrator wrote us a note by his own hand to give to the warden of Barbuda which was permission to explore the island. We asked about maps of Barbuda and he produced one made by the U. S. Army, which was for official use only. He gave us one.

After shopping a bit we went back to Nicholson's office and invited Rodney, and his wife Julie, to visit the ship about 1730. I asked Rod if he would operate my light trap at his home while we were in Barbuda and he kindly agreed to do so.

April 22 continued

After tea aboard I explained to Rod the operation of the trap and gave him four killing jars, one for each of the next four nights.

We left for Barbuda about 2400, because it cannot be approached except in daylight due to the shallow water and dangerous reefs.

Bill Amos left the expedition in St. Johns, complaining of stomach trouble. He checked in at the Kensington Hotel and was under the care of a Doctor for several days. He was to fly over to Barbuda on the Saturday flight if he felt better. We never saw him again until we got back to Antigua, six days later.

April 23, 1959

Planned trip to Darby Cave in Barbuda. Left at 0830 and landed on the beach with difficulty. We had to wade in through waist deep surf, and then quickly, before we were engulfed by large breaking waves. We were met by a native sailing sloop which took us from the other side of the coastal strip across the lagoon to Codrington. Our native guide, Judson Jack, was with the owner of the sloop, Mr. Decasta Weber. With sails which only he knew how to handle, he brought the ship right up alongside the pier. The center had a well with holes bored in the bottom, to admit sea water for storing fish.

We were told that the natives were taller on Barbuda than on the other islands because one of the English slave traders established a breeding farm on the island and selected for large stature and robustness.

We were met by Mr. Ivan Pereira, Island Agricultural officer, with whom Desmond Nicholson had made arrangements about transportation to the cave. We picked up two

April 23 continued

other guides to help carry our gear. Actually we had brought along all the equipment we could need for the two days of cave visiting and left some of it in Ivan's office. Ivan provided us with a Ferguson Tractor and two-wheeled farm wagon on which he had placed benches for us to sit on. After refreshment at the "Green Door" we started off. With no springs it was pretty rough, especially considering that the Island is underlaid with coral rock with frequent outcroppings of the rocks. As we went along, the crossing of the rocky sections of road was hard on the posterior. About a mile from the cave we came to the end of the road and had to walk. The path lead through thorny scrub brush, very dry. As we approached the Derby Cave it appeared as an oasis in the dry surroundings. There were palm trees and brush vegetation but down in a hole in the ground 72 feet deep at its deepest point. Actually it was a sink. The deep end had an overhanging rock ledge, from which water dripped, but very slowly -- so slow that it was forming stalactites and stalagmites in several places. We climbed down into the hole and collected there for several hours, as well as eating our lunch. My best insect collecting was in rotten logs and in a sizeable rotting papaya trunk. In the latter were fly larvae, beetle larvae and several kinds of adult beetles. We recovered two scorpions from the rotten logs.

Sodas at the Green Door were welcome on our return to Codrington. We took the sloop back over the lagoon and were aboard by 1700.

I worked that night till 0100 getting my mesquite cultures checked.

April 24, 1959

We left the Caribes at 0700 and arrived at Codrington, Barbuda, in the same manner as the previous day at 0745. We picked up the gear which we had left at the

April 24 continued

agriculture officer's office and rode on the same transportation as the day before, except that the road was rougher. When we were ready to start out the driver discovered that he had lost the tractor key. So the town's public loud speaker was manned in an effort to recover it. Finally Mr. Pereira found a key which would fit the ignition and we got off at 0900. We rode for 45 minutes then walked, reaching the first of two caves, Bryant Cave, at 1020. In the meanwhile, Desmond Nicholson, went on to the other cave, Dark Cave, with one native, to set a minnow trap in the deep water at the bottom of the cave, so it could remain undisturbed for 3 hours. It was baited with fish and bread. They were trying to recover "blindfish" from these waters.

Bryant Cave was a sink hole similar to Darby Cave, except there was a pool of water in the bottom. The aquatic biologists worked in this for invertebrates and I recovered with their help several larvae of Odonata. The cave is 90' deep and has a similar overhanging ledge as Darby Cave but not so much of a level area. There was a gradual slope down to the water and no vegetation because the rock ledge above hangs over it further.

We left Bryant Cave at 1130 and arrived at the entrance to Dark Cave 15 minutes later. Since Dr. Schmitt wanted the minnow trap left there undisturbed for 3 hours, we had to wait until 1330 to enter. We lunched in the meantime and also had some much needed rest. The guides found a large land tortoise 12" in diameter near the entrance to Dark Cave. They said these were plentiful on the island. One time 1200 were caught on Barbuda and marketed in Dominica.

We started down the cave at 1315 and were there for two hours. There was a 400' descent, sometimes entailing crawling through narrow spaces. It opened into a

April 24 continued

large room at the bottom where the underground water began. It was shallow and Desmond, John Finlay and Tom Bowman searched for and found invertebrates-amphipods and one species of shrimp. This same water proceeded on around to the deep pool where the minnow trap was set but the main passage through cave went another way. Nicholson went through the water, while the others walked on the main pass. At the deep pool, John Finlay donned face mask and snorkel and went in for the trap and to look around for fish. He had a flashlight rigged in a plastic underwater camera case. No fish were found but the minnow trap was covered with amphipods. From the catch they recovered about 2000 specimens. There were two species. We made vain attempts to capture bats from the cave but saw only one high on the wall of the large room over the deep pool. The only other insects seen were cockroaches living in the crevices of the walls. None were collected. We left the cave at 1550, having taken 35 minutes to climb out and arrange our gear for the trip home. We reached the tractor at 1625 and were back in Codrington at 1725. After saying goodbye to our hosts, we reached the Caribee at 1830.

That evening Cowan, Bowman, Art Mersereau of the crew and myself came down with an itch which was exactly like poison ivy rash in the U.S.A. It was in full bloom by the next day and I was most severely affected. Cowan remembered seeing plants of the Rhus family on the Derby Cave trip. Undoubtedly that is when we contacted the poisonous plant.

April 25, 1959

Moved from our anchorage near Codrington to near Cocoa Point, Barbuda, on the southern side. Here the marine biologists worked on the nearby reefs. The Captain

April 25 continued

sailed these waters with some trepidation because of many reefs around the island had wrecked many ships in the past. I did not go ashore at this place, spending my time trying to rear out as many mosquitoes as possible from the cultures.

April 26-27, 1959

At Cocoa Point. Stayed aboard and worked on cultures.

April 28, 1959

Weighed anchor from Cocoa Point, Barbuda at 0100 and headed for our final anchorage at the famous Nelson's Dock yard in English Harbor, Antigua. We arrived at 0600 and at mid-morning I accompanied John Finlay to the airport. Comdr. and Mrs. Vernon E. B. Nicholson provided the transportation. John left the expedition early since he had had but a month's vacation for the trip. I did some shopping in St. Johns while Mrs. Nicholson was doing some and we arrived back at the dock yard about 1500. We had lunch at home of Rodney and Julie Nicholson in St. Johns, son and daughter in law of the Comdr. I had an opportunity to inspect a supermarket in St. Johns. I was surprised to find but one American commodity of several dozen I examined. It was a frozen turkey from Minnesota.

April 29, 1959

From anchorage in English Harbor we left at 0835 for the Bat Cave (Schmitt, Nicholson, Bowman and Darsie) in Desmond's Morris station wagon. The cave is in one of the hills overlooking English Harbor. Desmond came prepared to take flash photos of the bats and I was bent on collecting 12 bats for ectoparasite survey. The cave was smaller than Dark Cave in Barbuda, and occupied by hundreds of bats, packed like sardines in the crevices. Much of the ceiling was within reach of a long-handled

April 29 continued

net. The cave was very hot, humid and ill-smelling because of the large accumulation of guano. The guano was inhabited by thousands of tenebrionid beetles. I collected no great number of these beetles because Dr. J. Gates Clark had taken them the year previous. I had prepared 12 quart jars, filled them half full of water, placed in 1 level teaspoon of detergent (Dreft) and about 15 drops of 25% lindane emulsion. The 12 bats were captured and placed in the jars and capped. Dr. Schmitt caught 5 and I caught 7. The lindane soon killed the bats. The scientific name of the bat is Brachyphylla cavernarum. By the time the collecting was finished, we were soaked to the skin with perspiration. Bowman helped get the bats in the jars, which was done essentially as one would take insects out of the bottom of a net. I had on heavy rubber gloves to prevent bites. We were back in English harbor by 1200, and I spent the afternoon extracting the parasites. Desmond was not satisfied with the pictures taken in the morning. He had developed the negative right away. So he and Dr. Schmitt went back to try again and was successful the second try. Desmond also retrieved some of the guano to use as fertilizer in his garden.

The technique for extracting the parasites from the bats is as follows. The jar in which the bat was placed with the insecticide detergent mixture, was shaken 100 times to dislodge the parasites. The animal was removed and placed in an enamelled pan and washed in a slow stream of water to remove remaining parasites still clinging to fur. Care was taken to save all the wash water which was then poured through a 60-mesh sieve. Then the lindane-detergent mixture was poured through the same sieve. The debris and parasites were washed to one end of sieve, then reversed and washed into enamel pan. The arthropods were pipetted into vials, each pan of washings examined carefully under a stereoscopic microscope for smaller specimens,

April 29 continued

especially mites. The parasites from each bat were kept separate and given a number to associate them with the specific host. There was an average of about 30 parasites from each animal for a grand total of 360. They were mostly bat flies of family Streblidae. At least two species of mites were also recovered.

April 30 to May 4, 1959

Spent most of my time aboard the Caribee plugging away at my mosquito reared associations. In summation, 34 cultures of living mosquito larvae were reared. From these 91 adults were reared from pupae and 218 adults were reared from larvae. Larval and pupal exuviae were preserved in 70% alcohol and associated with the adults. Larvae and pupae which succumbed during the rearing process were preserved for whole mounts. There were 126 of these. In addition there were many individual collections of adults and immature mosquitoes which were mounted or preserved without any rearing being attempted.

Summation of Rearing*

<u>Collection number</u>	<u>Pupae reared</u>	<u>Larvae reared</u>	<u>Larvae & Pupae dead</u>
1	5	8	7
2	15	10	7
3	3	18	7
11	10	18	13
16	2	2	4
13		2	
12	1	9	1
14	1	14	7
17		20	1
21	5	9	12
23	2	11	8
15		2	
20	2	3	1
24	8	7	2
32		34	3
31	3	4	1
33	5	9	10
37		1	4
49		5	1
29	2	4	2
47	1	2	1
38	9	15	2

* Sources of the collections were as follows: Tobago, 1-57; St. Lucia, 58-71; Dominica, 72-80; Barbuda, 81-87.

<u>Collection number</u>	<u>Pupae reared</u>	<u>Larvae reared</u>	<u>Larvae & Pupae dead</u>
59		2	1
64		1	
54	3	5	9
42 (52)		13	2
72	2		2
73			4
76	4	8	6
74		1	
75			1
81		1	5
87	3	9	1
78	1	1	1
<hr/>			
Total	91	218	126

March 31, 1959 Page 1

met Dr. Thomas H. C. Aitken, medical entomologist for the Trinidad Virus Laboratory, Port of Spain, which is supported in part by the Govt of Trinidad and in part by the Rockefeller Foundation, at 0645. He had a regular field ^{work} trip this day to collect blood from nesting birds for virus isolation study. Before we left the lab he showed me some of the ^{insect} parasites found in the nests. The most common is an Anthomyid fly of the genus Philarna. Larvae of this genus show a wide range of parasitism, from none at all, ~~to~~ living only on fecal material, to feeding on birds in nests and leaving the host while not feeding, to staying on bird host all the time. He is making a complete collection of hematophagous arthropods of Trinidad and Tobago. He showed me Tabanids, Simuliids, and Ceratopogonids. He leaves Chloroform tubes with certain natives around the island and they catch and save

March 31, 1959 Page 2

flies as they bite their domestic animals. We were joined by Dr. Edward Belle, a negro native from British Guiana (down here they refer to it as B.G.), Ph.D. in parasitology from McGill University, Montreal Canada, and a driver, Mr. Singh, whose favorite expression was "yes, Docta". We drove east to Sangre Grande, where we picked up another Indian who was in charge of the "cooperators" in that area. Out further we picked up a second native. These men spend their time hunting for the bird nests and keeping track of the development of the nestling birds.

On the way out Dr. Arthur told me that they had isolated St. Louis encephalitis virus from wild caught Culex coronator, Culex caudelli, Pooreophora ferox and Culex spissipes. Jenus encephalitis virus was isolated from P. ferox, Aedes scapularis, Aedes serratus and Culex taeniopus. In 1954, during the yellow

March 31, 1959, Page 3

fever outbreak, they isolated this virus from wild caught Haemogogus spegazzini 27 times. This species is the most common forest canopy species.

He also said he has a good problem for anyone interested. He routinely collected bird nests from the sites of the blood survey after the nestlings had left. The nests were brought to the laboratory, run through the Berlese funnel, and all animals, which came out, preserved. He has quite a lot of these collections and no time to work on them. He no longer saves the nests.

The first nest was located in a citrus grove at the El Reposo Govt. farm. It was a "sugar bird" nest. Dr. Belle exsanguinated 0.1 cc of blood from the heart and added 1 cc of saline to it in a tube, after making a blood ^{thin} smear. Measurements were made of wing and tail feathers as indexes of growth; then the "chord" measurement from elbow

~~April~~ March 31, 1959, Page 4

joint to hip bone in wing.

Dr. Aitken pointed out some cocoa plantations as we went to the next stop. He showed me the large "immortelle" tree (Erythrina) in among the short cocoa trees, which serve to shade them & make them grow better. These plantations used to be highly malarious because the immortelles were loaded with epiphytes, ^(Bromeliads) which held and bred Anopheles bellator, the vector. He pointed out that in looking for mosquitos breeding in these Bromeliads, one should punch them with a stick first to scare any snakes, chop them off gently, chop off the tops of the leaves provide a smaller area for pouring, then pour the water into a basin.

We visited next the Vega de Oropouche cocoa propagating station. It had a 200' square enclosed on sides and top by screen wire, plus an open air head

March 31, 1959 Page 5

house. The Venezuela house wren (Troglodites) had built a nest on top of ^{roof} supporting pipe. Two wren nestlings and a cow bird nestling were bled. I climbed up on a 1000 gallon tank and took a picture of the station. We also saw ~~the~~ a Tanager's nest but the nestlings were too small to bleed.

We went on to the last resting site which was near MP 7 1/4 on Vega de Oroponche Road. Here we saw 5 nestling little brown doves from two nests in palm trees.

I photographed a match wood tree (Geraton), which had a very slender trunk about 50' tall and a clump of leaves on top.

We went on to the end of the road to visit the Rio Grande Forest where Aitken had a canopy study setup. The boss native left us at the last rest site and returned to Sango Grande, and we let the second helper out about 1/2 mile from the last resting site, where he had

March 31, 1959 Page 6

some mosquito collecting to do. Aitken had that whole area covered by native collectors checking for mosquitoes at various places including chicken baited stable traps. It ~~was~~ ^{is} a virus endemic area.

after arriving at the end of the road we walked for about $\frac{1}{2}$ mile through tropical rain forest, predominantly in mora trees, Mora ^{excelsa} excelsa. They were very tall, some 200 feet. The area was being logged, so the monkey population was moving out. At his study tree, which was 150' tall, he had built a ladder to a level of 95', having collecting platforms at 25', 50', 75' and 95'. I climbed to the top, hoping to collect some Haemmo goque, but none were found. at the 75' level, I collected three

March 31, 1959, Page 7

darkling beetles. Dr. Aitken told me that at 75' and 95' they had taken 2 species of Phononmyia, 1 of Sabethes, and 1 of Haemogogus. Practically nothing was collected at 25'.

We returned to Port of Spain at 1200. Dr. Aitken had a severe cold as was not feeling well but took the trip anyway. He wants a list of the species of mosquitoes which I collect in Tobago.

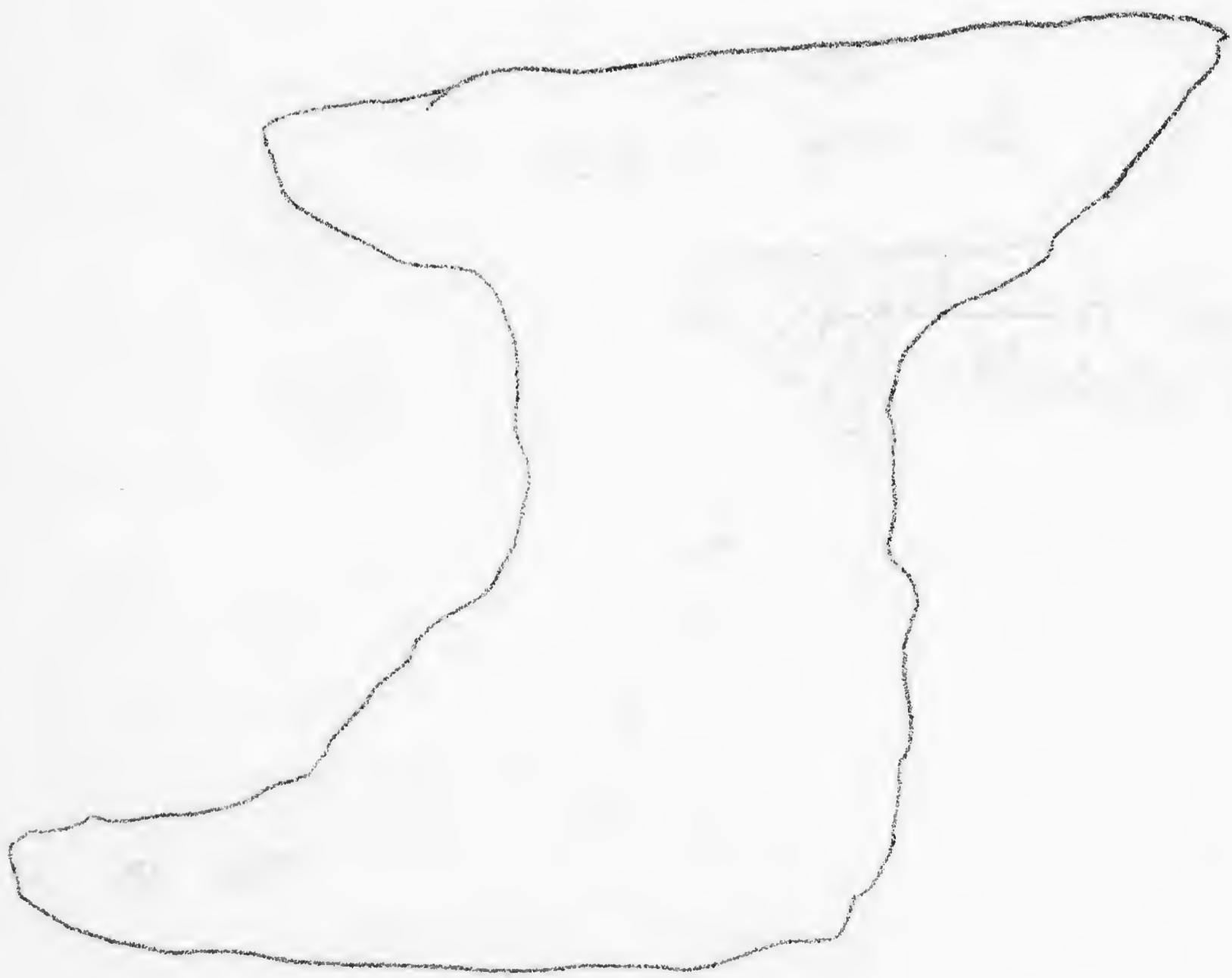
April 1, 1959

I was picked up at the Bretton Hall Hotel at 0800 by Dr. S.F. Chen, malacologist for the World Health Organization working for malaria eradication in the British West Indies Federation. Dr. Chen stopped for gas. I was surprised to hear on the station radio the obituary notices just as one would read them in American newspapers.

At the headquarters, I saw about 100 drums of dieldrin concentrate for residual spraying. They are having formulation difficulty with this dieldrin. It is mixed with a wetting agent called Maraspense, which imparts a brownish color to the final formulation. Malathion also is naturally brown. Both these materials leave a brownish stain on the walls which the rat likes to eat. They have been caught washing it off the nest by white washing the walls or papering over them to hide the dirty color.

April 1, 1959 cont. P. 2

There were 500 cases of malaria in Trinidad in 1957, 350 in 1958 and 18 cases so far in 1959. The Anopheles vectors in Trinidad are Anopheles remaneulus, An. agrassalis and Anopheles bellator. Majority of the cases were transmitted by the last named species. Since this species breeds in the bromeliads, copper sulfate is used as herbicide to kill them. They had a 1000 gallon tank spray truck which is used for this purpose. According to a map or their wall the 1957 cases were distributed as follows.



Most of the malaria is just south of the northern boundary.

April 1, 1959 (cont'd) page 3

Doctors are required to submit blood smears to this laboratory on all suspected malaria cases. They receive from 100-150 slides per month. There are also 38 evaluators of malaria control programs working out of this place. They survey human blood for presence of parasites. They collect about 10,000 slides a month. There are technicians examining for parasites, and their monthly capacity is 8000 slides per month. On Trinidad 95 percent of the cases are Plasmodium falciparum and the other 5 percent, P. vivax.

The islands of Trinidad, Tobago, Grenada, St. Lucia, Dominica and Jamaica have malaria eradication programs which are directed from this headquarters. This program is tripartite; the World Health Organization supervises and evaluates, The UNICEF supplies the equipment and insecticide, and the local government administers

April 1, 1959 (cont'd) page 4

the program.

Their laboratory includes both yellow fever and malaria. Dr. Chen told me that filariasis is all over the Caribbean Area, and its principal vector is Culex quinquefasciatus. This disease was brought to the region by the Orientals. In Surinam there are 60,000 Javanese who were responsible for the spread of schistosomiasis in that country.

I met the entomologist who works with Dr. Chen in the evaluating of the malaria eradication program. His name is Mr. Huibert Van Zeverden and he was a parasitology student of Dr. Swellengrebel in the Netherlands.

Dr. Chen's address is % Malaria Division, P.O. Box 556, Port of Spain, Trinidad, BWI.

April 2, 1959 Page 1

Left Caribes at 08⁰⁰ for Trinidad Virus Laboratory to secure a collection of Trinidad haematophagous insects from Dr. Thomas Aitken. He had vols of mosquito species which he had reared, saving them for visitors like myself. It was necessary to mount them on points because they were brittle & dried. He also showed me his mounting technique. He recommends for the tropics Dues cement, diluted 50% with amyl acetate. Tom was interested in my ectoparasite recovery technique. I explained it but promised to send him the reference when I get home. He gave me a home made table, on request, which was in his office. I had nothing aboard ship on which to work. It is 18" x 30" x 30". He showed me his colony of Trichoprosopon digitatum and gave me a dozen 4th instar larvae which I preserved. The ♀'s oviposit in cocoa pods containing water.

Dr. Aitken joined me for lunch aboard the Caribes then we went down

April 2, 1959 Page 2

the Imperial College of Tropical Agriculture (hereafter referred to as ICTA). He wanted to procure some horseflies to take with him to USA when he was going next week. He gave me a good collection of representative Trinidad Tabanids.

At the college I visited with lecturers in Zoology Michael Emsley and ~~E~~ Research Entomologist Michael Breese. The entomology curriculum consists of a year of general Zoology, a year of general entomology and a year of Economic Entomology. Their department head is Dr. — — Kirkpatrick. He was ill + I did not meet him. The college offers a two-year course leading to a degree of "associate" of the ICTA. They have two Americans, one graduate of Maryland State College and one graduate of Washington State College. They do not now give a degree equivalent to a baccalaureate but expect to begin soon.

April 2, 1959 Page 3

Their college is divided into teaching and research ^{and} presently it is primarily a vocational agriculture institute. No subjects other than agriculture are offered. They do give one year of preparatory training for students who have had too poor high school training.

The college is divided into four major areas of interest or "schemes":

1. Sugar Research Scheme - financed entirely by the sugar industry.
2. Banana Research Scheme - financed in part by industry
3. Cocoa Research Scheme - financed about 60% by industry
4. Soils Research Scheme - with no industrial financing.

This branch is divided into soil surveys of BWI islands and soil research.

Other research work on smaller scale is called a "unit".

April 2, 1959 Page 4

The most notable of the units is the Seismology unit. Entomology has only one unit. That is in stored products insects. Dr. Breese is working on pests of stored rice. He has no regular project assignments, just works on as he likes.

My host Mr. Emsley showed me around the campus where I had a chance to photograph interesting tropical trees and the college buildings. He took me to his house for tea about 1700, then took me back to Port of Spain. From there I took a taxi to the Trinidad Yacht Club where the Cambree was anchored.

April 3, 1959 Page 1

Returned to the Trinidad Virus Laboratory again to mount more of the mosquitoes. It was interesting to note that these adults were stored in vials which contained about $3/4$ " of naphthalene flakes and a piece of blotter over that. I was able to get 38 species of Trinidad mosquitoes this way.

Dr. Aitken sent word that the Caribbeans of their trucks as I could ~~use~~ ^{use} the transport the table conveniently. I went around via the Beetham Highway to get a picture of Shanty Town and the Buggards on the city dump. I also stopped at the ^{Royal} Victoria Institute museum to pick up insects given to me by Dr. Arthur Greenball, director.

Before leaving the Virus Laboratory Dr. Aitken showed me a collection of interesting insects which he is making. He had Automeris spp., Rothschildia spp. (called locally "Macaque")

April 3, 1959 Page 2

Dr. Aitken told me that he had pupae of Toxobrychites violaceus which had never been described. I suggested that perhaps I could do this sometime.

I arrived back on the Caribe at 1430 and we sailed for Tobago at 1530.

April 4, 1959 Page 1

Dropped anchor in Sandy Bay at Tobago at 0715. The overnight trip from Trinidad had been rough and not much sleep was the result.

We prepared for our first field trip and were put ashore at Crown Point near the Crown Point Hotel. We picked up two boys on the beach, George Arnold and Nestor Grant to help carry our gear. We engaged a taxi to take us as far up the Roxborough-Parlatimer Road as possible. On the way we stopped at the boy's homes to change their clothes.

A trip from Crown Point to the point where the road left the coast was about 30 miles. Happily I found that all roads and traces (paths through the forest) were marked with mileposts. We walked up through road construction they are constructing a road surface road from Roxborough to Parlatimer over the mountain. It will take 5 years to complete.

April 4, 1959 Page 2

We did our first collecting up a small stream which was running. I collected fish and Crustaceans as well as aquatic insects and mosquito larvae and adults. I found a pool along the stream which has Euler larvae.

Back on the main road we collected along it. I found larvae in a pool made by auto wheel ruts, also in flower bracts of the Heliconia, a plant resembling the banana and in the same family. I netted a snout beetle which was flying

Up the stream in the dense woods I caught a snake, called locally a "horse whip". I believe it is Oxybelis acuminatus, a long thin climbing snake.

One tree I was warned about was the manchinella, ~~which has~~ the sap which will blister your skin. The species is Hippomane manchinella.

April 5, 1959 Page 1

Stayed on board during the morning to organize the collections made yesterday.

In the afternoon went with Dick Cowan and Tom Bowman over to Pigeon Point to a mangrove Swamp. On the way I collected termites. The mangrove trees are 60' tall. There was no mosquito breeding found in this area.

Receive permission to operate a light trap at the Crown Point Hotel. Patrick the maintenance foreman at the hotel helped me hook it up. The manager, Mr. Ted Gomes, was very cooperative.

April 6, 1959 page 1

First thing in the morning I went over to the Crown Point Hotel ~~to~~ ^{and} pick up my mosquito trap and collection. At 1000 we set sail for Man of War Bay at the N end of ~~the~~ Tobago. We arrived there at 1700. It is said that English Admiral Nelson hid his entire fleet from the French in this bay. On the trip our fish line caught a ^{25 pound} wahoo or Kingfish, which we were served several times subsequently. Very tasty.

After anchoring Cowan went into the village of Charlottesville to call on the (Bird of Paradise) Hotel at Spangside where a friend from ICITA was vacationing. The gentleman, Prof. Robin Forster, wanted to make a field trip with Cowan. He returned reporting that some of the townspeople were very unfriendly to him, despite the fact that he had no camera with him. The day before Bill Amos had tried to photograph some nude children in the same village

April 6, 1959 page 2

and the father became very indignant and raised quite a commotion about it, but no violence resulted. It was explained to us afterwards that the natives do not want to be photographed (1) unless you ask them first, and (2) unless they are dressed up in good clothes. They also expect to be paid for posing.

In the morning I spent from 0630 to 0930 on Buccoo reef with Schmidt, Arroz, Nicholson and Findlay. We were called for by Mr. Dillon, a native from Buccoo village with a very substantial boat. Parts of the reef were exposed because of the lowest tide of month and we looked for specimens under the coral rock. Most abundant were various kinds of brittle stars, sea urchins and crabs.

My legs were exposed too long to the sun and they were red and sore for the next few days.

April 1, 1957 Page 1

Covered + I met Prof. Robin Forester of ICTA at 0715 along with Conrad Coombs of own crew to help carry collecting gear. We rode in Forester's car to the top of Back Hill where he parked the car and we started walking up the Pigeon Hill Road toward Pigeon Peak, elevation 1600'. I collected mosquitos, larvae from Bromeliads, cut ends of bananas, Heliconia, and cocoon pods, and a bromeliad plant (I got plant from Tanya). On this road we saw at close range the green bird or yellow tail, which not the size of a crow, except that the sides of the tail are bright yellow.

On return trip down from Pigeon Hill I stopped to see Mr. Charles Turpin local estate owner ^{at 1300'} for permission to open to light trap at his home. He gladly gave us permission + was. Turpin invited us to tea when we to bring the trap up in the evening. I accepted.

Spent the afternoon working on the live mosquito cultures and at 1600

April 7, 1959 Page 2

I went up to Turypins accompanied by Art Mercereau, deck hand on the Caribe, who carried the traps. We discovered that his "Delco" generated 36 volts which would not operate the 110 volt trap. So we disconnected the motor and left it as a light trap without benefit of the motor. We had to use one of their light bulbs, 50 watts, connecting the electric cord directly to the light socket. We left the $\frac{1}{4}$ " mesh wire covering to exclude the large insects.

After having tea with the Turypins we returned to the Caribe about 1900 in the dark.

April 8, 1959 Page 1

The Caribee was scheduled to return to Sandy Bay for more work at Buccoo Reef. Cowan and I decided to drop off at Bloody Bay and walk from Parlatuvier across the Island to Roxborough and engage a taxi to take us back to Sandy Bay. Bowman decided to accompany us on this trip.

We arose at 0500 and at 0530 Schmitt, Wenseman and I walked up the hill to Turpins to get the traps. We returned, had breakfast and prepared for the day's collecting trip. About 0830 we hit the beach at Bloody Bay ^{there was} ~~from~~ a banana steamer boat anchored in Bay picking up bananas and coconuts from a warehouse ashore. We found a farmer, Carleton Roberts, who was going three miles up the Roxborough road and offered to show us the way. A Trinidadian from the boat walked along (with only jockey shorts on) as far as Parlatuvier. He was looking for cigarettes, so I gave him one of my cigars. At Parlatuvier we picked up two interesting natives, who were accompanying Roberts to

April 8, 1959 page 2

his farm. They were Levellyn Thompson, the local agricultural agent, and Batiste, the ward officer. As we went up the hill Cowan walked with the agricultural agent and I walked with the ward officer, while Roberts led the procession. ~~James Roberts~~ Batiste, a fine young man with infectious smile, asked me some ~~and~~ searching questions about the future of the West Indian Federation. How could they become prosperous like the USA?? The agricultural ~~agent~~ ^{officer} showed us native mango stock to which he had grafted the improved Jalis mango. He showed us the local custom of planting the red colored plant, dragon blood (Cordyline terminalis), to mark the dividing line between estates. He has been teaching the natives contour cultivation on the steep slopes. Both of these officers were very nationalistic in their attitude, and were looking to the day when they would be independent of ~~the~~ the United Kingdom. We passed several branches of the Erasmus River then branches of the Bloody Bay River farther up the mountain. The agricultural officer told us that the Forest Reserve has 141 inches of rain annually. Mosquito larvae were collected from leaf-filled pool, Uliconia flowers, Bromelads,

April 8, 1959 page 3

Slow moving streamlet along side of road, palm sputter, other insects were collected along the trace. Bowman carried the butterfly net and collected insects, including a beautiful morpho butterfly. One time he was so energetically chasing a butterfly that he fell down the side of the mountain about 20 feet with a crash. In the process he lost one cyanide jar, except for the lid. ~~It~~ was not hurt.

When we reached the crest of the mountain we reach the point where we had collected on April 4, the first day on the island, so we moved on faster. We reached the road building operation which was two miles from Northborough about 15:30 and Lowan was anxious to reach that point before 16:00 to inquire about mail. We asked if a construction truck was going to town and it was so we hopped on. After stopping for petrol, we started a wild ride, in which the driver was obviously trying to scare the white passengers. We made it to the post office in time and after mail check, a bus bound for Scarborough pulled up, so we rode it back. The fare was 72¢ each BW. A taxi took us back to

April 8, 1959 page 4.

Sandy Bay, a distance of 8 miles from Scarborough.
We had walked about a mile of which at least 6
had been uphill, although the ^{run from Parvaturien} trace had been so
constructed that the ascent was fairly gradual.
The bed felt very good that night.

April 9, 1959 Page 1

Stayed aboard all day working with mosquito cultures and mounting or preserving insect specimens collected the previous day.

In the evening at @1800 I returned to the Crown Point Hotel with the New Jersey mosquito light trap and set it up for operation again.

April 10, 1959 Page 1

Left the Crown Point Hotel anchorage in the morning with Cowan and Conrad Carasco, steward of Caribbee, as helper in taxi which took us to ~~St~~ Mount St. George where we turned off north on the Mt. St. George - Castana Road. The taxi took us as far as possible along this road, then we got out and walked along the trace to the top of the ridge in the the southern end of the Tobago Forest Reserve.

On the ride up we followed the Hillsborough East River and passed the Hillsborough Dam which supplies water to Scarborough. The hillside below the buildings at the dam level was very nicely decorated with plants spelling out TOBAGO.

as we proceeded along the trace ~~I found four~~ collected four lots of mosquito larvae in the first quarter mile in Heliconia, Bromeliads, and cut bamboo. Butterflies of the genus

April 10, 1959 Page 2

Heliconius were collected between
mp. 4 1/2 and 5. We collected along
the Hillsborough East River near
MP 5. I found & collected serpids.
at one spot near there a root string
was stretched across the road and some
bird dung had fallen on it & hung there.
Several large black ants were feeding on
this mass. I collected them. Near MP 7 1/2
I found a pool in a rock ledge, leaf
filled, ~~but found~~ ^{containing} larvae of mosquitoes
and beetles. The most prolific breeding
in Heliconia flower bracts anywhere
on the island was ^{discovered} at the top of the ridge
near MP 7 3/4. Many were collected for
subsequent rearing.

From a rotten log near MP
7 1/2 I did a good series of beetle larvae
pupae and one adult. Also was stung
by scorpion found in the log.

We met the taxi on return and
were driven back to the Sandy Bay

April 10, 1959 Page 3

via Easterfield Road and Northfield Road.
This took us past the Government House
where the Governor of Trinidad & Tobago
stays when he is on the island.

One interesting point about the trace,
it followed for a long distance on the
~~same~~ level along the main tributary of the
Hillsborough East River; when ~~we~~
the trace finally left the river and
we started up the mountain, the land
got very dry with a peculiar soil type.
We gradually left this zone when we
got to the rain forest.

April 11, 1959 Page 1

Stayed aboard and worked with mosquito cultures and mounted specimens captured the previous day.

April 12, 1959, Page 1

This is the last day on Tobago. Cowan and I left the Sandy Bay anchorage at 0845 for Hermitage where we planned to collect once more up the mountain into the Forest Reserve. The Caribes expected to sail up to Man of War Bay, on which Hermitage is located, and pick ~~up~~^{us} up on the beach that evening. We had some difficulty persuading the taxi driver to take us beyond ^{Charlotteville} Parliament since the road was rough, though dry. We were instructed to stop at Mr. Patrick's house, the caretaker for the Hermitage estate, which we did and arranged to return at 1700 to be shown the trace to the beach.

We followed up the Hermitage River for about $\frac{1}{2}$ mile, passing through a nearby cocoa grove where I found more Trichopropodon breeding in cocoa pods. Unlike the

April 12, 1959 Page 2

other pods I had collected from, these were freshly opened, not dried.

We left the river and proceeded through a hillside barava planting and up the ~~crest~~ ^{ridge to the south} of a hill, very steep slope.

We entered the reserve beyond the Barava and cacaoa by cutting our way with machetes. As we got

to the edge of the reserve, cutting through thick brush we found a porcelain sign tacked on a tree

"Forest Reserve". On up the steep

ridge I collected soil from the buttress of a "Balata type" tree of family

Sapotaceae to bring back for Bowman to check for invertebrates

mosquito larvae were found in the a little water in the butt of a palm

frond, in water in a palm spathe, and from Heliconia flower bracts.

April 12, 1959 Page 3

I found one rotten log which was particularly rich in Coleoptera immatures and adults. One great disappointment was chopping a beautiful, large, iridescent green Scarab beetle in half with my machete. I collected soil samples for Dr. Schmitt at ~~100~~ approximately 1000 and 500 feet above sea level.

In the Hermitage River we collected crustacea and fish. One species of fish had a ventral sucking disc so it could cling to rocks in fast moving water.

After descending from the climb we enjoyed a bath in the river. Then we called on Mr. Patrick again who treated us to a green coconut apiece. He showed us the path to the beach, where we found a boat building industry. The beach was stony with quite a surf except in the extreme western

April 12, 1959 page 4

end which was sheltered by a cliff.
The Caribee arrived shortly and
Desmond brought the skiff in to
pick us up.

We weighed anchor at 2000 from
Man of War Bay heading for St Lucia
The prospect was a 30 hour trip.

April 13, 1959 Page 1

Spent the day aboard the Caribee en route from Tobago to St. Lucia. While we were on the lee side of the islands it was quiet enough to work on my cultures. As we passed St. Vincent the Captain slowed down to give me more time. He turned around at one point, and the ship became ~~stalled~~ ^{squawled} in the tricky winds and the jib was badly ripped.

The first island we sighted in the morning was Canouan in the Grenadines. We passed Savan Island and Petit Moustique. We passed between Petit Moustique and Moustique to the lee sides of ^{remaining} the islands. Next was Grande, & Bequa, St. Vincent, then St. Lucia.

The first view of St. Lucia was the famous Pitons, Gros Piton and Petit Piton. The former is 2619' high and the latter, 2461'.

We arrived in Castries Harbor at 1900.

April 13, 1959 Page 2

As soon as we arrived in Castries and were cleared by the Harbor master, Desmond Nicholson and I went ashore taking a New Jersey mosquito light trap to a home known to Desmond. We took a taxi to the home of Comdr. Charles D. Milbourne, Fairview Gardens, Castries, 790 feet above sea level. The trap was hung on a tree in his garden, which was very beautiful. It started operating at 1945.

April 14, 1959 Page 1

the previous evening we had arranged with Comdr. Milbourne to take Cowan and me to the mountains to collect. For a price, he and his adopted negro son, Randy (20 years old) acted as our guides this day. ~~We left~~ Randy came aboard the Coruba at 0700, having had breakfast on a neighboring yacht and we left at 0730, picking up the Coruba on the way. We travelled out the Castris-Demmeroy Road for 10 1/2 miles to the main ridge of the island, called the Barre de L'Isle. On the way we passed an area ^{where} ~~which~~ a whole village had been covered by a land slide, killing over 300 people. This occurred ⁱⁿ ~~about~~ 1936. The place is called Ravine Poisson. It had rained every day for 40 days.

When we reached the Barre de L'Isle, we found a trace following along

April 14, 1959 Page 2

the crest of the ridge. We walked along it for about 2 miles in a southerly direction. We collected several butterflies along the highway and trees; Randy used the net part time. I found mosquito larvae only in ~~was~~ one Bromeliad of a dozen examined. Insects were dug from several rotten logs. I also collected a very interesting grasshopper. Comdr. Melbourne was interested in collecting native orchids for his garden. Cowan cut down a small tree on which was several orchids growing from a mass of root-like structures, as they were cutting this off, a beautiful grasshopper with arched eyes and arched and green wings jumped out. Its antennae were 3-4 times longer than the body.

April 14, 1959 Page 3

We had eaten a lunch prior to collecting on the trace. When we returned after the hike on the trace Cowan set about collecting a sample of fruit from a tree of the genus ~~Amorpha~~ Ormosia. The beans were black and red and about twice the size of our kidney beans. Not finding a smaller specimen, Dick climbed up on a hill along the road and cut off a large limb over hanging the road. Knowing that the branch would fall on the road, we watched for traffic to prevent the limb from falling on a vehicle. Just as it fell a bus load from Castries came around the corner and had trouble getting stopped as the limb crashed. We worked like beavers for a while chopping up the limb to clear the road. afterwards I picked up a bag of the beans to

April 14, 1959 Page 4

take home. No beans are used by the natives to make jewelry.

Tom Condon and Randy were invited to spend the night aboard the Caribe so we rode back toward Castries till we came to the Castries-Soufriere Road. We turned south till we came to the trace going over the hill to Marigot Bay, where the Caribe had sailed to during the day, about three miles ^{we parked the car in the yard of a neighborly family.} S of Castries. Marigot Bay is a beautiful, quiet spot. The shore drops so sharply to deep water that the Caribe could anchor close to shore and tie up to nearby palm trees. After the hot walk, a swim was a welcome relief.

The trap had been left connected at Castries and I arranged for someone at Condon Melbourne's home to turn it on this evening.

April 14

~~Page 5~~, 1959 Page 5

There was work to be done on the
cultures and mounting and preserving
the day's catch that evening.

April 15, 1959 Page 1

Stayed aboard ^{most of the} day working on mosquito cultures and mounting insects. We moved from Marigot Bay to Castries, leaving at 1000 and arriving at Castries at 1100. We went ashore to shop and at 1200 ~~we~~ Dr. Schmitt + I took a taxi up to Fairview to get ~~our~~ traps ~~at~~ bid farewell to Comdr. and Randy Milbourne and pick up the traps and catch from the previous night. On the return we stopped at a club called the Seven Seas, where yachtsmen habitually gather in Castries, had some refreshment + returned to the ship.

In the early morning Comdr. and Randy had left the ship and walked back over the hill to pick up their car.

In the afternoon we sailed on up to Pigeon Island, anchoring in Gros Jelet Bay. It is 8 miles north of

April 15, 1959 Page 2

Castroica - a small offshore island
near the northern end of the island
St. Lucia.

~~Page 1~~

April 16, 1959 Page 1

Cowan and I left the Caribes at 0850
for a field trip from Gros Islet, ^{St Lucia} north.
This is a very dry part of the island.

We went through thorny scrub
bush on our way to a distant hill
which we hoped would be forested.

After trying to find a short cut, we
were forced back on the road by the
thorns. We walked through the
Cap Estate, where we saw some very
modern machinery at work harrowing
the soil. The estate was in the hands
of the U.S. Govt during WWII and an
army base was located there. We
walked up Mont du Cap at the north
end of the estate. We found black top
roads and a water line going up
the hill with fire plugs at intervals,
made in Philadelphia. At the top
of ~~Spindler~~ Mont du Cap were the

April 16, 1959 Page 2

remnants of the army base, at the very top was a gun emplacement for the very large coastal artillery. The ~~base~~ ^{base} must have been 50' in diameter with a rim bearing a massive gear ring.

The Cap Estate had recently changed hands and the new owner, in addition to clearing the land, had cleared the brush from along the water line going up the hill. There were a series of ponds with water in them but no mosquitoes found. Undoubtedly they were for the stock ranging there.

The area was rich in Lepidoptera and I spent time collecting butterflies. My prize specimen was a black & yellow swallowtail in perfect condition, collected on top

April 16, 1959 Page 3

on top of the Mount.

We walk back down through a ~~Barbados~~ plantation and called in at the estate house for water but no one was there. We inspected the ruins of a fort, or fort-like structure but could find no information on it. We returned to the ship about 1300 and spent the afternoon working on cultures + mounting day's catch.

That evening we had dinner as guests of the ship's captain at José's Tropic Cabana.

Yes - nice dinner

April 17, 1959 Page 1

We left very early, in the morning for Fort de France, Martinique, where we stopped for several hours to shop and take our stores. We sailed out again about 1500 for an overnight trip to Roseau, Dominica.

In Fort de France we called on the American Consul then Nicholson, Bowman, Schmitt, Cowan and I ~~then~~ called on Dr. Blanche, Directeur du Service de Protection de Vegetaux, Service de l'Agriculture. We told him of our individual interests. I presented Dr. Schmitt with copies of the local scientific society proceedings. We talked of the Pasteur Institute of the West Indies and French Guiana. I met Dr. Floch, medical entomologist at Pasteur Institute de Guyane Francaise.

~~We sailed at 1500.~~

April 18, 1959 Page 1

arrived at Roseau, Dominica,
at 0900 after overnight sailing from
St. Lucia. The city was not as modern
as those of Castries and Fort de France.
With Deshaons Nicholson as a guide
we went ashore (Cowan and myself)
to try to make arrangements for an
overnight trip to the east side
of the mountains and especially to
the high interior mountains.
Our taxi driver, Jimmy, took us
to the Agriculture Department headquarters
at the Botanic Garden where we tried
to locate the forester, Mr. Hill. He was
out of town and no one else could give
us the information about forest
trails and parts of the island to visit,
so we decided to call on the Island
Administrator, The Hon. H. L. Linds.
At his office we were told that he would
see us in 30 minutes. In the meantime
we went to see the chief of the Island Police

April 18, 1959 Page 2

Lieutenant Colonel B.B. Humphrey^f
at Police Hq nearby. We ~~asked him~~
told him our mission and tried
to secure his help in ~~trying~~ getting
transportation and overnight
accommodations on the east
side of the Island. He suggested
stopping at Salibia where they had
good visitors accommodations.
We asked about Castle Bruce and
Rosalie. He had one bed available at
Castle Bruce + prospect of borrowing
a cot. ~~The~~ The walk from the end of
the passable road was about 6 miles.
We decided to go to Castle Bruce if
transportation could be arranged.
~~We went back~~ Lt. Col. Humphrey
was leaving for seven months leave
and has a son in Toronto, Canada,
who graduated from Oxford. We called
on Mr. Lindo who was very gracious to
us and had his assistant looking for
a "drive it yourself" car. While he was doing
this the administrator refused himself!

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and went out telling the assistant not to make final arrangements until he returned. When he came back he had arranged for transportation by a Public Works Department vehicle. He charged us \$10.00 B.W.I. for the use of an English Land Rover, Diesel Powered version of the American Jeep, which he personally collected. We were pleased for the same service by commercial taxi would have cost \$50.00 B.W.I. After thanking him profusely we visited the Lands and Surveys Department and bought the latest Dominica map for \$1.00 B.W.I. We returned to St. Col.

Humphrey's office at which time he gave us a chit of introduction to the Castle Borne Police Station. At the same time he bade his assistant, Sgt. Phillips to try to call the station and appraise it of our arrival. I was interested to learn that the

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administrator was an Englishman, native of Jamaica, and a ^{former} Rhodes Scholar to Oxford.

We returned to the ship at 11⁰⁰ ~~PM~~, having made plans to leave at 1300, and packed our collecting gear and provisions for three meals. We ate an early lunch & went ashore to meet our car and very competent driver, Sampson. We left Roseau and drove NW along the coast to the Jayou Valley Road and inland to Pond Casse. There we picked up our ^{native} guides to Castle Bruce. They rode with us from Pond Casse as far as the car could take us. Their names were Telford Roberts and Cabot John Hope. These boys, estimated age 17-19 years old, were regularly employed as highway construction labor on the new ^{road} being built from Pond Casse to Castle Bruce. They live in Castle Bruce and walk daily the six miles to the

April 18, 1959 Page 5

job site. Sampson left us at the end of the passable road and promised to pick us up again in the morning about 09:30. ~~So~~ So we started the walk to Coll Bruce at 1545. The first $\frac{1}{4}$ mile was in mud resulting from the clearing operation. Then we took off through the forest for another $\frac{1}{4}$ mile and finally reached the old foot trace. In that distance we traversed a maze of root systems from tall trees with floated roots.

One thing different about this trace was that it had been paved almost the entire length to Coll Bruce with stones, not a smooth surface, but stones of different sizes yet placed symmetrically as a ^{narrow} road. Walking on these stones was necessary most of the time because of the narrowness of the trace. For the poor Americans this was very hard on the feet, even with heavy field shoes. I had to stop

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twice and narrowed my shoes to
bend ~~was~~ down with my machete.
The trace was mostly downward
from about 2000' elevation to sea
level. We came to three clearings
in the mountains, the first had
a crude hut with a Coca Cola sign
tacked on the front, the second was
a banana plantation; with two shacks;
the woman living in one was very
friendly to us, the third was growing
pineapples planted around a settlement
of three houses. At one point we had
to remove our shoes, roll our pants
up and wade ~~the~~ fast moving Belle
Fille River. The water really felt good
to our aching feet. We purposely
did not collect on the way down
knowing that we would traverse the
same trail the next morning. We
reached the Castle Bruce Police Station
at 1745. It was located on the trace
at the edge of town & we never did get to
see the town itself.

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We were greeted by the office in charge, Corporal Elwin Simon St. ~~John~~ Aimmie. He was tall, slim round-faced and very cordial. We presented our letter of introduction and he showed us to the T O room (T O = Travelling Officer) where there was one 3/4 size bed with sheets and two small pillows. We told the Corp. that St Col Humphrey had suggested borrowing another bed from the Colonial Development Company (C.D.C.). He did just that + fixed up a narrow cot with straw tick + sheets. The St Col. had phoned instructions to have water boiled ahead of our arrival so it would be cool. It was still hot, but I was so thirsty that I drank two glasses of hot water. There were at least six other men around the station to whom we were not introduced so it was impossible

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to determine if they were employed as constables or just hanging around. After the beds were fixed up, they pointed to a path leading through a pasture across the road and told us that was the way to the river for bathing. We took towel + soap + hurried off for it was approaching dusk. No path lead down to the Belle Fille River just about 100 yds from its mouth at the ^{Atlantic} Ocean beach front - in plain view of the beach and the traffic using it. The river at that point was about waist deep and with a nice sandy bottom. It did not take us long to get out of our clothes + in to the cool water, despite the spectators. After bathing we discovered that the rising tide had partially wetted our clothes which were on the ground nearby. On the return trip to the station, we stopped to talk to a native who was building

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a canoe out of planks. The shell had been nailed together in the approximate shape then filled with water; ~~and~~ He explained that they add rocks to the bottom to help shape the wet wood into the proper form. I looked along the beach for a moment for shells ^{to bring back to} John Finlay, our malacologist, but found it rocky and rather barren.

Back at the Station, Dick Cowan an old Navy cook started to prepare the supper. He had started to heat the tea water ~~and~~ the soup in another sauce pan and had opened two other cans of food when the manager of the Castle Bruce Estate, Colonial Development Company ^(Mr Edward White) arrived and insisted that we have dinner with him. This was rather awkward since we had invited the Corporal to dine with us. We agreed that if the Corp could come too + if he would use the food which we had opened in addition to his own

April 18, 1949 page 10

We would be happy to accept. We followed him up the hill about 100 yards from the Police station to his home which was quite commodious by any standards. Since the Colonial Development Company is a government project I assume they have provided this nice home. It had a front porch with modern aluminum & plastic chairs, living room, dining room, kitchen and several bedrooms which we did not see. There was red linoleum floor covering in all rooms. In back of the house was a small building with wood ~~burning~~ ^{burning} cooking stove where the food was prepared. In the kitchen was a kerosene-fired refrigerator and table. We were served first coconut juice with ice cubes, then rum punches, which ~~consisted~~ of were served in shot glasses, $\frac{3}{4}$ rum and $\frac{1}{4}$ lime juice + sugar water. This was topped off with cold beer which we had purchased prior to the invitation.

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Our host explained that the estate had been in operation since 1950, its purpose being the agricultural development of this area. Since 1950, they had ~~started~~ ^{56 acres under cultivation,} ~~500 acres of~~ ^{planted in coconut trees, cocoa and} ~~500 acres of~~ bananas. Their labor receives ~~bananas~~. Their labor receives \$1.12 B W I a day. Mr. Whit was 66 years old and proud of it. He had worked as several estates including the Melville Estate, another project like this one in the north end of the island. We were called to dinner at 2:00 and the first course was our Campbell's soup, minestrone, served from a very large soup serving dish in high style. Following that we had orange juice (from one of our cans), then the main course which consisted of Dolphin steaks very tasty, dasheen slices, meat balls from one of our cans, and bread and butter. Following that we had one half pear each served on a

April 18, 1959, Page 12.

small plate, and finally coffee. During the meal Mr. White tried to tune in his battery radio but the batteries were low and it would play for only 15 minutes and stop. Also the cook, her helper, her husband and little boy all sat at the kitchen door and watched us as one would do sideshow. A serving girl was at our sides constantly, it seemed.

The conversation at the table centered around the corporal ~~and~~ and the local court which had been held that morning. A travelling magistrate was the presiding officer and the corporal acted as the prosecution attorney. One case in particular was outstanding because the defendant ~~was~~ ^{had a} lawyer, a very unusual occurrence. She had been accused of cultivating land which belonged to an estate and "lawyer Charles" had come in by jeep to defend her. The corporal had won the case over the lawyer.

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and was well pleased about the whole thing. Incidentally the lawyer planned to appeal the case. We left at 2130 but Mr. Whit insisted that we have breakfast up there even though we wanted it at 0600, so we left all our provisions with him. We went to bed immediately for we were dog tired from the days trip.

I forgot to mention that Mr. Whit was very proud of his ice cubes so we were served them in all our drinks including the coconut and orange juices.

The two native boys who carried our extra bags were most impressive. Shoeless, they negotiated the rocky trail nimbly and with ease. Telford carried my field bag and a sack of his own and led the way most of the time. He was very wiry, thin and about 5'11", but with a gravel voice. He helped us across the rough spots, esp. crossing the Bell Fall River. As we got closer to Castle Bruce we passed two women

April 18, 1959 Page 14

walking the same direction, one an older woman carrying a suitcase. ~~He~~ Tel offered to carry her bag for her. She produced a small towel, wrapped it in a circle which he placed on his capped head, hoisted the suitcase on top of the towel and carried it the rest of the way. The other boy, Cabot, was rather shy, also wiry, about 5'8" wearing a green beret. He carried our box of food on his head the whole way down. ~~Not~~ ~~having~~ the proper change at the police station the boys wanted to be paid off since it was Saturday night. They received \$2.00 B/W each way, and not having the proper change they got \$2.50 each then with the remainder to be paid at the end of the trip the next day. We asked them to be back at 0630 the next morning and wondered afterwards if they would show up. They were on the spot early ready for the return journey. Very trustworthy.

Sleep came very slowly despite

April 17, 1959 Page 15

my tired condition, for two reasons. The
narrow bed with hard mattress was
uncomfortable and too short, my
feet protruded about 6" beyond the
bottom. Also the mosquitoes found
us very soon and reaching under
the blanket to escape them could not
be tolerated for long periods, because
of the temperature.

April 19, 1959 Page 1

We were awakened at 0530 by Corp. St. Annie, dressed and went up to Mr. Whites for breakfast, arriving about 0600. There was no sign of life, all the shutters were closed (they have no window sashes) so we awakened them. This meant that the cook had to prepare breakfast from the start and we were delayed one hour. The guides were right on time, for we hoped to leave at 0630 to arrive at the other end to pick up the car and Thompson at 0930. Breakfast was served at 0630 and consisted of tomato juice, eggs, bread and coffee. The tomato juice was served cold in a soup dish, obviously the cook thought it was tomato soup we asked them to put in in glasses so we could drink it. Our host did not join us but joined us with a glass of beer. During the week his work schedule is as follows. Arrives at 0530 leaves house at 0630 to start labor working at 0700. Everyone stops work from 0900 to 0930 for breakfast then back to work till 1400 when they stop for the day. He was so used

April 19, 1959 Page 2

to this that even on weekends he could not eat his breakfast until 0900. We were joined at breakfast with Ch Corp. After thanking our hosts ^{and} packing up we hit the trail for the six mile climb back up the mountain. This time it was slower since we stopped to collect along the way. Mosquito larvae were found in bromeliads and cut ends of bamboo along the trace. When we ~~had~~ ^{reached} the clearing the woman who had greeted us so cordially on the way down came running out and asked us in for a cup of coffee. Since we were already one hour late we had to decline. At the village of Formel where we had seen the Coca Cola sign we inquired for drinks. They had only one thing - sized Coke and one cream soda. Since there were not drinks for all we did not buy any. This place was about halfway up the mountain. Farther up the trace we met three men one carrying a case of large cokes to Castle Bruce. Although it was warm

April 19, 1959 Page 3

We each had one and enjoyed it. We arrived at the end of the trail at 1045 and Sampson was waiting patiently. He had arrived two hours ~~before~~^{ago} just in case we started earlier than planned. We stopped to collect several places on the road to Pond Casse. I found ^{and pupae} larvae of blackflies in a fast moving stream, called Donkey River by the natives. Both men and women were working on the road on this day, Sunday. We drove on to Pond Casse, where we filled up with diesel fuel and drove onto the Trans insular Road toward Portsmouth. We stopped by a large river at Bells and at lunch, drinking its water to quench our thirst, we collected around this spot for a short while, then consulted the maps for future operations. We decided to proceed directly to Vieille Case, a village on the NE end of the island and try to traverse part of the trace

April 19, 1959 Page 4

leading to Mont au Diabolo. We stopped momentarily at the beach at Calibishie to collect shells. From Blenheim to Vieille Case the road was very tricky. ~~The~~ Although along the coast, it was a series of climbs and descents of precipitous hills which extended straight down to the sea below, which at times was well over 500'. Around one curve we met a bus which apparently had poor brakes for he narrowly missed crashing into us.

at Vieille Case we found a trace leading to Mt. au Diabolo which was a steep ascent, and very dry. Cowan and I walked up about 500' to a level spot, finding native homes all along the way. Time was running out and we had yet a great distance to travel before we would reach any good collecting so we decided to head back to Portsmouth where we were to meet the "Caribee". There were many pedestrians, esp. from Vieille

April 19, 1959 page 5

to Blenheim, because it was Sunday.
We met the Caribes on schedule
welcomed our "home" again after the
night ashore.

April 20, 1959 Page 1

Sailed from Dominica to Montserrat.
Left Dominica at 2000^{hours} and arrived
at Plymouth, Montserrat about at
1200. The island look very different
from the others because it has
gently rising land from the sea,
at least around Plymouth, for quite
a long distance before the mountains
rise steeply. This land was all
cultivated, and appeared in good condition.

At 1300 we went ashore. For Dr
Schmitt wanted to meet Mr. Peter Lake,
Island Development Officer, who had
some information about fish poisoning
as understood at some areas, esp
around Redonda Island. The floor
contains large amounts of copper which
the fish accumulate in their bodies. Eating
this fish causes poisoning to humans.

Cowan and I went to the forestry officer
about the possibility of returning between
April 28 and May 3 to collect on the
Island. We were met by Mr. Jeffers, the

April 20, 1959 page 2

agricultural Officer. He engaged a taxi to take us to see the forester, Mr. Howes. Mr. Howes was ill with flu but the plan was to drive to his house and ask if he is well enough to talk to us for a few minutes. Cowan brought a plant press ashore and we stopped at the Island Agriculture station where we left it. We went several miles north of Plymouth to Mr. Howes' country home. He is native of Montreal of European extraction with a Canadian wife. We had an audience at his bedside. He told Cowan that a Jamaican botanist, Cooper Proctor, had recently spent three months on the island. He told me that the island seemed to be particularly rich in Hymenoptera fauna. He reviewed which parts of the island should be visited and offered to accompany us. The usual place for visitors to visit is Chance's Mt on the S end of the island. On the return trip we stopped at a stream called "Runaway Gut" which Mr. Jeffers said had a superstition attached to it.

April 20, 1959 page 3

If you tasted the water you will return to Montserrat. He produced a glass and we each had a drink. We ended our trip at Fox Bay, where we had arranged to meet the Caribbees. The sand on this beach was black but fine and good for swimming. The waves were high so Desmond brought our bathing suits & we changed into them and carried our clothes at arms length out to the dinghy, then stayed for a swim in the waves. The marine biologists were collecting about crabs on the beach, which they claimed were ^{much} darker than the same species found on white sand. I finally swam out to the yacht, a distance of about 200 yards. A group of teenage youngsters, school class, was having a picnic on the beach.

We had dinner there and left that night for Barbuda.

One interesting incident ^{happened} on the dock at Plymouth. When we landed there was an American on the dock. He introduced himself

April 20, 1959 Page 4

as Dr. ^{V.V.} Bowman, of the ICA program there. He was a former USDA marketing specialist and was there helping to develop markets for the vegetable crops grown in Montserrat. He said that a plane load of carrots was leaving the next day for Puerto Rico.

They also grow tomatoes which he is interested in. We didn't have time to get his full story.

April 21, 1959 Page 1

Arrived in Barbuda about ^{11 00}~~0600~~
and anchored off Codrington, the
only town on the island. This island
looked very different from the others
we have visited because it was low,
the highest point being 205', and dry.
The island approach was different
too, for beyond the coastal strip,
only about 100 yds wide, was a large
lagoon, $\frac{1}{4}$ mi wide and 7 miles
long. The vegetation of the island
is xerophytic, much cactus and
agave plants.

The Captain went on the island
to get clearance to land our party
but the warden of the island would
not give it to him because we had
not gotten clearance from Antigua,
the HQ from which Barbuda is governed.

April 21, 1959 Page 2

He refused the capt. permission to use the govt. radio to call Antigua and get the permission over the air. Our only recourse was to sail back to Antigua and secure the proper permission. This ~~was~~ ¹¹⁰⁰ ~~was~~ ^{two} ~~was~~ ^{days} ~~was~~ ^{collecting} for it meant losing ~~two~~ ^{two} days collecting. After lunch we weighed anchor arriving in St. John's harbor, Antigua, at 2200.

April 22, 1959 Page 1

After ~~breakfast~~ ^{lunch} we went ashore
in St. Johns. The Caribee was anchored
far out in the harbor and the outboard
motor would not work so we had to row
all the way in to the dock. We went first
to V.E.B. Nicholson & Sons St. Johns
office and met Desmond's brother,
Rodney, with whom we made travel
arrangements for the ^{air} journey home.
We then went on up to the Administrator's
Office to secure permission to land in
Barbuda. While waiting ^{to see him} for
we bought maps of Antigua but there
were none of Barbuda for sale. The
Administrator, Mr. Ian Turbott,
was apologetic, but claimed the
incident was due to his not knowing
exactly when we were to arrive. He
showed us a letter from the U.S. State
Dept. announcing our plan to visit
both Barbuda and Antigua. Dr. Schmitt

April 22, 1959 Page 2

had provided our State Dept. with a proposed itinerary of the trip and the islands to be visited were notified officially.

The administrator wrote us a note by his own hand to give to the warden of Barbuda which was permission to explore the island. We asked about maps of Barbuda and he produced one made by the U.S. Army, which was for official use only. He gave us one.

After shopping, but we went back to Melbolson's Office and invited Rodney and his wife Julie, to visit the ship about 1730. I ask Rod if he would operate my light trap at his home while we were in Barbuda + he kindly agreed to do so.

After tea aboard I explained to Rod the operation of the trap and gave him

April 22, 1959 Page 3

four killing jars, one for each of the next four nights.

We left for Barbuda about 2400, because it cannot be approached except in daylight because of the shallow water and dangerous reefs.

Bill Dmos left the expedition in St. Johns, complaining of stomach trouble. He checked in at the Kensington Hotel and was under the care of a doctor for several days. He was to fly over to Barbuda on the Saturday ~~flights~~ flight if he felt better. We never saw him again until we got back to Antigua, six days later.

April 23, 1959 Page 1

Planned trip to Darby Cave in Barbuda. Left at 0830 and landed on the beach with difficulty. We had to wade in from worst deep surf, and then between waves. We met by a native sailing sloop which took us from the other side of the coastal strip across the lagoon to Codrington. Our native guide, Johnson Jack, was with the owner of the sloop, Mr Decasta Usher. With sails only he knew how to handle it & brought it right up alongside the pier. The center had a well with poles bore for the bottom to admit sea water for storing fish.

We were told that the natives were taller on Barbuda than on the other islands because one of the slave traders established a breeding farm on the island and selected for ^{large} stature & robustness. ~~the~~

April 23, 1959, Page 2

We were met by Mr. Juan Pereira,
Island Agricultural Officer, with
whom Desmond Nicholson had made
arrangements about transportation
to the cave. We probably had two other guides,
to help carry our gear. Actually we
had brought along all the equipment
we would need for the two days of
cave visiting and left some of it in
Juan's Office. Juan provided us with
a Ferguson tractor and two wheel^{ed} farm
wagon on which he had placed benches
for us to sit on. After refreshment at
the "Green Door" we started off. With
no springs it was pretty rough,
esp. considering that the Island is
made of coral rock with frequent
overhangings of the rocks. As we
went along, the crossing of the rocky
sections of road was hard on the
posterior. About a mile from the

April 23, 1959 Page 3

came we came to the end of the road and had to walk. The path lead through thorny scrub brush, very dry. As we approached the Derby Cave ~~was~~ it appeared as an oasis in the dry surroundings. There were palm trees and lush vegetation but down in a hole in the ground 72 feet deep at its deepest point. Actually it was a sink. The deep end had an overhanging rock ledge, from which water dripped, but very slowly - so slow that it was forming stalactites and stalagmites in several places. We climbed down into the hole and collected there for several hours, as well as eating our lunch. My best insect collecting was in rotten logs

April 23, 1959 page 4

and in a sizable, rotting papaya trunk. In the latter were fly larvae, beetle larvae and several kinds of adult beetles. We recovered two scorpions from the rotten logs.

Jodas at the Green Door were welcome on our return to Codrington. We took the sloop back over the lagoon and were aboard by 1700.

I worked that ~~afternoon~~ ^{night} till 0100 getting my mosquito cultures checked.

April 24, 1950 Page 1

We left the Canoe at 0700 and arrived at Codrington, Barbuda, in the same manner as the previous day. ^{at 0745} We picked up the gear which we had left at the Agriculture Officer's office and rode on the same transportation as the day before, except that the road was rougher. When we were ready to start out the driver discovered that he had lost the tractor key. So the towns public loud speaker was warned in an effort to recover it.

Finally Mr. Pereira found a Key which would fit the ignition and we got off at 0900. We rode for 45 minutes then walked, reaching the first of two caves, Bryant Cave, at 1020.

In the meanwhile, Desmond Nelson, went on to the other cave, Dark Cave, with one native, to set a minnow trap in the deep water at the bottom

April 24, 1959, Page 2

of the cave, so it could remain undisturbed for 3 hours. It was baited with fish and bread. They were trying to recover blind fish from these waters.

Bryant Cave was a sink hole similar to Derby Cave, except there was a pool of water in the bottom. The aquatic biologists worked in this for invertebrates and I recovered with their help several larvae of *Odonata*. The cave is 90' deep and has a similar overhanging ledge as Derby Cave but not so much of a level area. There was a gradual slope down to the water and no vegetation because the rock ledge above hung over it further.

We left Bryant Cave at 11:30 and arrived at the entrance to Dark Cave

April 24, 1959 Page 3 Dr. Schmidt
15 minutes later. Since ~~we~~ wanted
the minnow trap left there undist-
urbed for 3 hours we had to wait
until 1330 to enter. We lunched
in the meantime and also had
some much needed rest. Tortoise found
by men under
rocks eye

We started down the cave at
1315 and were there for two hours.
There was a 400' descent, some
time entailing crawling through
narrow spaces. It opened into
a large room at the bottom where
the ~~underground~~ ~~pool~~ underground
water began. It was shallow
and the Beardard, John Finley and
Tom Bowman searched for and
found invertebrates - amphipods
and one species of shrimp. This same
water proceeded on around to
the deep pool where the minnow trap

Where rocks had fallen
they had left retreats in
which our guides at once began
to explore, as I asked what
they were doing one of them
"came-up" with a fair sized
tortois perhaps a foot in length
for which later the guide demanded
or at least requested pay \$1.50 B.M.

1200 captured at one time
and sold in the market in Pominer

April 24, 1959 Page 4

was set and the main cave went another. Nicholson went ~~that~~ through the water, while the others walked on the main pass. At the deep pool, John Farley donned face mask and snorkel and went in for the trap and to look around for fish. He had a flash-light rigged in a plastic underwater camera case. No fish were found but when the minnow trap was covered with amphipods. From the catch they recovered about 2000 specimens. There were two species. We made vain attempts to capture bats from the cave but saw only one ~~on the~~ high on the wall of the large room over the deep pool. The only other insect seen were cock-roaches living in the crevices of

April 24, 1959, Page 5

the walls. None were collected. We left the cave at 1550, having taken 35 minutes to climb out and arrange our gear for the trip home. We reached the tractor at 1625 and were back in Codrington at 1725. After saying goodbye to our hosts, we reached the Caribe at 1830.

That evening Cowan, Bowman, Art Menseman of the crew and myself came down with an itch which was exactly like poison ivy rash in the USA. It was in full bloom by the next day and I was most severely affected. Cowan remembered seeing plants of the Rhus family on the Derby Cave trip. Undoubtedly that is when we contacted the poisonous plant.

April 29, 1959 Page 1

From anchorage in English Harbor we left at 0835 for the Bat Cave (Schmitt, Nicholson, Bowman and Deane) in Diamond narrow station wagon. The cave is on one of the hills adjoining English Harbor. Deane came prepared to take flash photos of the bats and I was bent on collecting 12 bats for ecto-parasite survey. The cave was smaller than Dark Cave in Barbados, and occupied by hundreds of bats, packed like sardines in the crevices. Much of the ceiling was within reach of a long-handled net. The cave was very hot and ill-smelling because of the large

but had to go back because Desmond forgot film camera w/ lens.

April 29 1959 Page 2

accumulation of guano. The guano was inhabited by thousands of tunnel-bored beetles. I collected no great number of these beetles because Dr. J. Gates Clark had taken them the year previous.

I had prepared 12 great jars, filled them half full of water, placed in ^{level} 1 teaspoon of detergent and about 15 drops of 25% lindane emulsion. The 12 bats were captured and placed in the jars of and capped. The Dr. Submitt caught 5 and I caught 7. The lindane soon killed the bats. The scientific name of the bat is _____

By the time the collecting was finished we were soaked to the

April 29, 1959 Page 3

skin with perspiration. Bowers helped get the bats in the jars, which was done essentially, as one would take insects out of the bottom of a net. I had on heavy rubber gloves to prevent bites. We were back in English Harbor by 1200, and I spent the afternoon extracting the parasites. Desmond was not satisfied with the pictures of taken in the morning. He had developed the negatives right away. So he + Dr. Schmidt went back to try a gain and was successful the second try. Desmond also returned some of the guano to use as fertilizer in his garden.

The technique for extracting the parasites from the bats was follows. The jar in which the bat

Apr 29, 1959 Page 4

was placed with the undecylated detergent mixture was shaken 100 times to dislodge the parasites. The animal was removed and placed in an enamel pan & washed in slow stream of water to remove remaining parasites, still clinging to fur. Care was taken to save all the wash water which was then poured through a Gooch sieve. Then the ~~decylated~~ undecylated detergent mixture was poured through same sieve. The debris and parasites were washed to one end of sieve, then reversed & washed into brass pan. The arthropods were pipetted into vials, each part of washing preserved carefully under a stereoscopic microscope for smaller specimens, esp. mites. The parasites from each lot were kept apart and given a number to associate it with the specific host. There was an average of about 30 parasites from each animal for a grand total of 360. They were mostly of family Streblididae(?). At least two species of mites were recovered.