

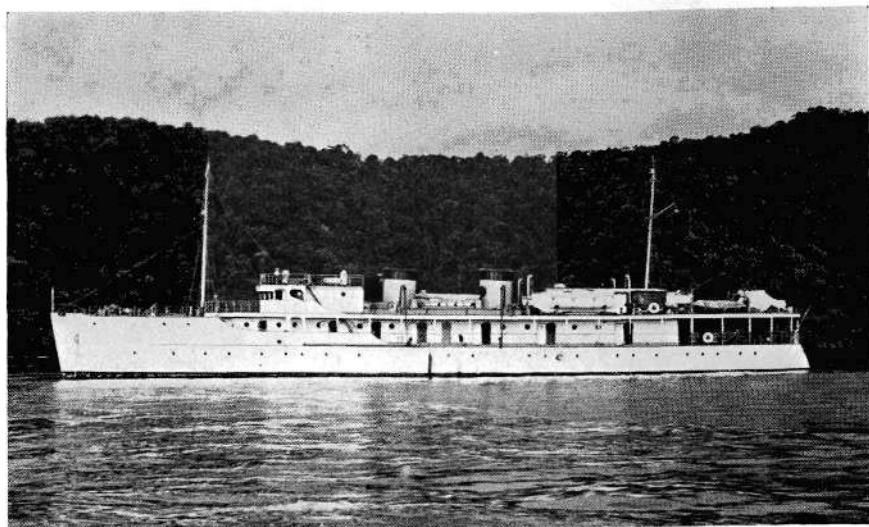
THIRD GALAPAGOS TRIP
OF THE VELERO III IN THE WINTER
OF 1933-1934

*From the Log Book of the "Medicine Man"
of the Trip*

BY
EDWIN O. PALMER, M. D.

This is to acknowledge indebtedness to Captain G. Allan Hancock
for the adventure; Mr. W. Charles Swett and Mr. John
Garth for photographs used and Miss Edith
Hibbard, S.S., for valuable advice.

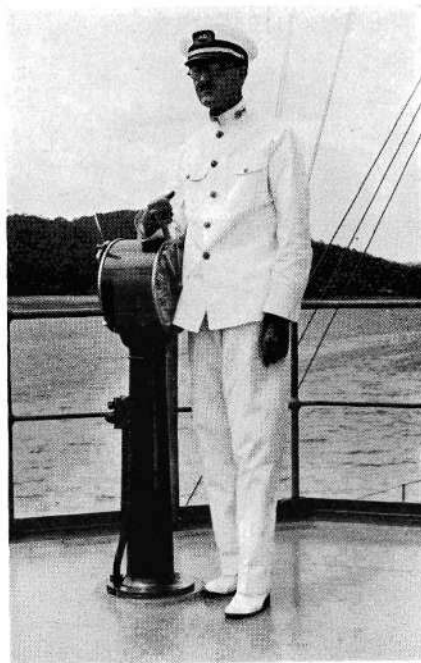
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The Velero III Off Equador



Captain G. Allan Hancock



Chief Officer Swett

FOREWORD

Captain G. Allan Hancock, the host and manager of the expedition herein described, a capitalist and successful executive of long standing, is a man of many parts and each in itself a finished accomplishment that should satisfy the most ambitious. He is an oil developer, realtor and subdivider, an agriculturist who raises the finest vegetables, Holstein cattle and white Leghorn birds this country affords. He is a locomotive engineer, an aviator, a shipbuilder and navigator with a license to navigate any ship in any ocean, and a lusty oarsman; an excellent cook and a finished 'cellist, as well as a philanthropist and patron of pure science. I know of no other man of means who devotes a quarter of his time and revenue to so worthy an object which is so little appreciated by the layman.

As a navigator his discretion, precision and punctuality give his guests every confidence in their safety on his craft. He lays his own course and night or day is always on the bridge when the anchor goes up or down, and in fog or storm. As host he makes it hard for his guest to avoid referring to his ship as "our ship."

This was my third trip with him and I distinctly remember my first when he said to me, "Call me 'Allan,' this is our home and if you think of anything that would make us more comfortable let us know."

I don't know how many craft the Captain has owned but understand that the *Velero III* is the fourth he has himself built by day's labor, and if there **were** errors in the others they have been eliminated in the *Velero III*. She is a twin screw Diesel cruiser 195 feet over all, a 30-foot beam with 14 knot cruising spread and a 10,000 mile radius. Her refrigeration plant easily feeds thirty men three months as at our best clubs, except that the fish course would be decidedly better.

She has every device for ease and safety in navigation as, gyro-compass, radio compass, metal mike or steersman, electric fathom meter and electrically transmitted log report at the chart table. She carries two twin screw and two single screw boats, four skiffs and a raft. Her radio operator keeps us in touch with home, land and ships, as well as bringing us our morning news sheet. Her staterooms enjoy electric heat, fans and forced ventilation, salt water, and hot and cold fresh water shower baths which add much to the comfort of her guests.

The *Velero III* was built more particularly for scientific research, and for that purpose she is equipped with a double powered dredge boat, mechanical sounder, an apparatus for taking deep sea specimens of bottom soil and water samples and temperatures at different depths; electrical apparatus for photographic recording of cosmic ray, as well as benches and sinks for the sorting of specimens, and many cases for their storage, also diving helmet for submarine investigation.

For living specimens she has a row of large, electrically heated and irrigated fish tanks, and two tiers of various sized cages, as well

as a carpenter and material for building many more. She has electric and machine shops ably manned to repair any apparatus from a watch to an engine.

In her fully equipped photographic room, microscopic, tank and dry specimens may be recorded in motion or still pictures, and properly filed, while her separate developing room does the dirty work. These are in charge of two professional photographers as well as accessible to the amateurs on board.

For safety and philanthropy the Doctor's room carries an adequate pharmacy as well as a complete surgical armamentarium with suitable dressings, etc., for major or minor surgery. These are more in use for the benefit of the natives than for those on board.

Best of all, the *Velero III* carries a crew of twenty men headed by first mate, Mr. Charles Swett, who is himself a civil engineer, boat builder, navigator, photographer and general organizer, who coordinates the details of the ship's work with clock-like efficiency. Her crew is not only able but willing and intensely interested in the success of her ventures.

For pleasure she carries properly manned a piano, a 'cello, violin, flute and motion pictures for all moods; and for our edification, a library of some thousand volumes about half of which are of a scientific nature, but also scintillating with the classics, adventure and biography.

The ship rides like a swan and if the sea comes over her bow one would have to be on the bridge to know of it.

Not the least of the requirements of a successful expedition is the selection of the personnel, and I have yet to see any but the best judgment used here. We all feel that each cruise has made us life-long friends.

On a typical day we arrange to drop anchor in a new location while the tide is going out, as low tide is most advantageous for the work of the scientists. We breakfast in our work clothes at eight and when finished find the dredge boat, fish boat, and two or three skiffs in the water. The dredge boat is soon off with the students of hydroids and crustaceans. Then the students of insects, of marine botany and geology are towed in their skiffs to the locations selected from the chart on the previous day. Then the fish boat goes fishing for we must furnish a fish course for 28 men, and as the expedition advances, to feed the various animals and fish on board, as well as for museum and aquarium specimens, for classification, and the study of their intestinal parasites. At noon those without lunches are collected for lunch and if not finished with the location, return in the afternoon. If through, the afternoon is spent sorting and classifying the morning's collections. The fish boat contacts the natives, trades for fruit and curios, and often animals, and above all, takes pictures of them at their usual occupations. The Doctor visits any natives found ill and the boat furnishes needed medicines.

We dine as one would at his club, at six, and after dinner we have one or two hours of classical music by the trio or quartette, fol-

lowed by motion pictures taken on previous trips, or one of the scientists aboard favors us with a talk on his pet subject, accompanied or not by lantern slides. Later, each returns to his work of sorting or packing specimens. The large spotlight is dropped to the water's edge and plankton or miniature sea life is collected with small fine nets, and bottled, dated and located. Specimens from small fish and serpents to mammoth sharks attracted by the light may be taken with ease.

Every 100 miles the ship is stopped to take deep bottom, water samples and temperatures.

At towns of English-speaking people the Captain gives free of charge, a concert and exhibition of nature pictures, thus stimulating interest in the fauna of their country as well as in biology in general.

A hearty welcome awaits the boat everywhere, especially where there are fishermen out of fresh water or who have serious illness without medical advice.

Trading with the natives is very interesting. Our money is not understood, but a bunch of cigarettes will purchase a bunch of bananas, a large basket of papayas, oranges, or avocados, while a discarded shirt and overalls are good for a native dugout and paddles. Empty tin cans or trinkets from the "five-and-ten" rate turtles, monkeys, honey bears, armadillos, anteaters or what have they.

The far reaching influence of these expeditions is little understood by the average layman. Each scientific collector returns with many specimens of each species found. The institution he represents holds sufficient for its study and display and trades the remainder with other scientific institutions all over the world for specimens from fields they have studied. Thus these expeditions are putting the biology of the eastern Pacific ocean on the maps of the world.

On our recent trip we visited forty locations, including islands and mainland bays between home and Guayaquil, Ecuador, some 4° south of the equator.

THIRD TRIP OF THE VELERO III TO THE GALAPAGOS ISLANDS IN THE WINTER OF 1933 AND 1934

At 8:15 a.m., December 30, 1933, our party were at breakfast on the Velero III at her dock at Wilmington. In fact, the skipper's family and many friends of the party were also among the breakfasters, and the various rooms were cluttered with unpacked baggage. Clouds were low and a slight mist was falling. Farewells were said, empty trunks were put ashore for storage and at 11 a.m. lines were cast off and we started down the harbor with great hopes of adventure and useful discovery, for with us were six scientists—all biologists—and each to collect in his line from the shores, tide lands, lagoons, and the bottoms of bays and harbors, while the fish tanks and numerous cages made and to be made, must be filled with the inhabitants of sea and land for the benefit of aquariums and menageries.

After a slight delay because of the density of harbor traffic we rounded the light and turned south in a drizzling rain and a temperature of 59°F.

Our course was 148 and we soon settled down to a cruising speed of 14 knots, with a port view of dense clouds and rain obscuring the coast towns to the south. A fresh wind whipped the sea into pretty white caps under a low cloud ceiling.

The second call to dinner brought response from but four, and too late our never-fail seasick medicine was administered as none could keep it down.

There was no change in the weather at 8 p.m. but later the wind freshened and the pilot house was in spray when I retired at ten.

After passing San Diego our course was changed to 145 and the sky cleared during the night so that a blue dome, except for a low cloud bank to the west, greeted a full table at our 8 a.m. breakfast. It was the last day of 1933 and our first day out, so with good resolutions I advised all aboard that each was expected to paint every scratch with 3 percent tr. of iodine at once, and that all else in the way of injury was to be reported to me. Each had previously been examined and grouped for possible blood transfusion.

The noon temperature was 63°F. At 2 p.m. we were off Cedros Island and the Mexican coast line and changed our course to 141.

I spent the afternoon giving the first typhoid shots to those who were not vaccinated last year. Later re-arranged the medicine closet.

New Year's morning greeted us with a smooth sea and clear sky and accordingly all were on hand for breakfast. While I vaccinated for typhoid, etc., the scientists were selecting their working table assignments for some were to be increased or shaded with canvas for comfort and non-interference. The temperature was 78° as

we passed Cape San Lucas off the south end of Lower California and we held the course of 141.

Mine is a single room starboard stern and in it I have behind my berth a three-foot book shelf where I soon placed the tomes I brought for study and pleasure. Today I started a new work on ductless glands called, "The tides of life." I have also found a chair and small table for the room across the way where I shall pin out crabs, shrimps and other small animals for Charley to photograph. Just to stern of my room is the photographic room where we look forward to doing some fine work.

Everybody well today and all happy and raring for work. After dinner Professor Frazier tells us of collecting on Vancouver Island and exhibits some fine lantern slides on the subject. Mr. Garth shows some very beautifully colored lantern slides of pictures taken by him on the two previous trips, to the Galapagos, of the *Velero III*, and after an hour of classical music by the trio most of the party retired to their reading while I went to the bridge and received a very interesting lesson in astronomy from Smithy.

Tuesday, January 2nd, seemed much warmer because of the increased humidity no doubt, as our noon temperature was but 70°, so all adopted the costume of shorts and shoes and were very comfortable. We took a few minutes at a time of direct sunshine to prepare for more exposure later. Early in the forenoon we saw our last seagull of the northern type and soon noted that we were being followed by albatross. Then a few booby birds appeared and we felt quite detached from the home port as all familiar objects disappeared.

Still on our course of 141, our first landfall appeared in the distance about noon, and at 4 p.m. our hook was down in Braithwaite Bay off Socorro Island, the largest of the Revilla Giegedo group of volcanic islands off the coast of Mexico, lying between 18°34'N., and 19°20'N., and 119°57'W., and 114°50'W.

Socorro Island is a semi-submerged cinder, slightly mildewed, and with the redeeming feature of possessing fresh water, but with the misfortune of being unable to pass it because of the repellent character of its contour. (Visiting ships take notice.)

Its single central summit has an altitude of 3706 feet above the deep surrounding sea and should in fair weather be visible from a distance of 70 miles. At first glance it appeared like a large ripe boil but it soon showed signs of discharge; in fact, it proved to consist entirely of a conical mass of terrestrial excrement. The surface it at first presented to us was thickly covered with a low tangled mass of cactus and prickly brush, too dense for penetration except for lava and ashes which have gushed out of numerous vents and crevasses and rolled their hot chocolate blanket to the precipitous border of the cone, thus rendering it unapproachable by man except for a short sandy beach on the southerly side. This is said to be accessible when the wind is in a certain favorable quarter.

The south slope is said to grow an abundance of a certain kind of wild bean which has been eaten without fatal result. (The Mexican army should be informed.)

Robins, canaries, swallows and blue herons are said to inhabit

the island, and also enough wild life, to prove the presence of fresh water. Turtles, crawfish and crabs are abundant and amply paid our shore party for their visit. We can vouch for an abundance of sharks and porpoises in the vicinity; in fact, we were greeted by an enormous school of porpoises containing the largest individuals I have ever seen.

Two of our boats went out with fishing parties and succeeded in bringing in a nice catch of cavalla, which is one of the hardest fighting fishes of its size I have ever had the pleasure of handling.

We saw a medium sized manta or giant ray which we avoided, but we were unfortunte enough to get hooked up with a large blue shark which tried to steal a grouper off the hook and caused us a hard half-hour's thankless toil to bring him within rifle shot, which is the destiny of all sharks caught stealing our fish. Our dredge boat dug its dirt and brought in enough submarine plants and animals to keep our scientists busy most of the night. I know that I picked a million crabs from a peck of sand before I turned in and I retired comparatively early.

Thursday, the 4th, was smooth, fair and only 71° at noon. The dredge boat started out first, and later Charley took me light-tackle fishing in the fast fish boat. I had caught our box full of 5 and 10 pound cavalla when the sharks got after me, nabbed a grouper and before I could free my tackle I rubbed a guide off my pole on the gunwale. I came in to save tackle and spent most of the afternoon straightening and rewinding the guide on my rod.

At 2 p.m. we weighed anchor and following a course of 248° we watched Socorro go gently sliding up the map beneath a dome of all the more brilliant pastel colors.

At 8 a.m. on the 5th, our anchor was down in Sulphur Bay, Clarion Island, 18°20'N., 114°45'W.

Clarion simulates the mutilated remains of a caramel iced chocolate cake after the pantry visit of a satiated delinquent child. It is the westernmost of the group and 214 miles from Socorro; it is a little over five miles long from east to west, and from one to two miles wide—wider in the western end, and is densely covered with cacti. There are three prominent peaks, 1100, 933 and 959 feet high respectively, the highest being at the western end. The eastern and western sides are rough and precipitous. The northern face is a series of perpendicular cliffs several hundred feet high, which culminate in a ridge running nearly east and west. From this the land slopes rapidly at first and then gradually to a flat plateau, which inclines gently from the foot of the hills to the sea, in the neighborhood of the two coral beaches on the south side. The western of these is Sulphur Bay. Here lay the Veleru while we of the landing party first explored the coral and shell formations at the water's edge. Then we investigated a dried lagoon bed surrounded with bushes, where we visited the rookery of an uncountable number of booby birds, taking pictures of the most intimate phases of their domestic life.

Captain, Charley and I chased and lost a red runner snake but later found that some one else brought a smaller one to the boat. We fished most of the p.m. and took many vari-colored and marked fish

unfamiliar to us, also many cavalla, and at last a shark. Both Captain and I lost lures and leaders from our light tackle.

At four we found the scientists with enough material for the night so we weighed anchor and took a course 135.

Saturday, the 6th, the sea was rough all day, slopping over the decks most of the time, all scientists uncomfortable and for the most part spent the day lying down, though a few made attempts at meals. At lunch the Captain was nearly thrown off his chair. Sky leaden and frequent squalls. My watch was 8 to 10 with Smith and the sea was over the bow most of the time. The temperature at noon reached 86° and all were glad of the privilege of wearing little clothing.

Sunday, the 7th, was clear with but a few clouds at the horizon and a smooth sea; though the temperature reached 84°, all were grateful for the change.

By noon we sighted Clipperton Island, an isolated atoll, where it peeks up about ten feet above the surface of the sea down at 10°18'N., and 109°14'W.

Clipperton is a marine doughnut about ten times the size of a race track, having roughly the form of the pride of a bald-headed man. Like an iceberg, the greater part of it is under water. Unlike other islands, it is alive and reaches out its pearly hands to greet the curious mariner with the fond welcome of a buzz saw. It has a long and well known ancestry and like a true scion of aristocracy, is still supported by the family tree.

Clipperton is a true concretion while most of the islands we have contacted are excretions. It is marooned on a basalt rock about 60 feet high, like a Christmas wreath on a clothes tree. It supports about a dozen coconut trees, billions of crabs and myriads of birds of passage that have not been properly house-broken. (American foreign missionary societies please take notice.) It has been claimed by France, owned by Mexico and abandoned by its garrison after driving one man to the murder of 48, and 50 women to polygamy. We contacted it with a cold steel dredge but noting its boiling surf, found it too hot for comfort and passed it up.

It lies about 670 miles on course 234 from Acapulco, Mexico. The breadth of its coral belt varies from a few yards to a quarter of a mile, and 5 to 8 feet above high tide. Its central circular lagoon has a depth varying from a few inches to over 55 fathoms. It contains five small islands and brackish water which in dry seasons has the odor of ammonia, from decomposed guano, as the islands are the habitat of so many birds as to have attained the popular name of Egg Islands.

During the rainy season waterspouts frequently break on the south shore of Clipperton and we were fortunate to witness a small and incomplete one, the first for most of us. While we were with it, the cloud ceiling was low and threatening, and with a temperature of 84° and excessive humidity, we departed with no regrets.

With a compass course of 118 we bade farewell to the largest atoll in this part of the Pacific and started one of the most disagreeably

hot and humid nights of the trip to date. The very wind was oppressive; all except Charley were in shorts and shoes.

Monday, the 8th, was 85° and sultry. The sky was partly clear. The scientists had plenty of work on the quarterdeck from the result of Sunday's dredging and I spent some time pinning brittle stars to sheet cork and the rest in the pilot house watching the numerous schools of fish we were passing. Last night the Southern Cross first met our vision, and I learned that it is about as perfect geometrically as the signs of the zodiac.

Tuesday we still held our compass course with naught but sea in sight, and a temperature of 83°, while we perspired perceptibly and occasionally audibly, with no clothing but our regimental shoes and shorts.

I ran out of work and read "Penguin Island" by Anatole France. On Wednesday, the 10th, the heat let up to 78° and we were fairly comfortable. The sea was smooth though many long swells denoted that we had reached the confluence of the Japanese and Humboldt currents. Our course was changed to 115° as the trade winds freshened. I vaccinated a number of the crew for the second time, and with the others, read most of the day. In the evening Mr. Garth illustrated a biological address with colored lantern slides. The trio rendered the usual popular classical program and we called it a day.

Thursday, January 11th, we were hitting about 14 knots on a smooth sea, under a clear sky, in a temperature of 73° and not too much humidity for comfort, in fact, perfect summer climate in our own Hollywood. All were in anticipation of our first landfall in the Galapagos Archipelago.

The Galapagos are a huge carbuncle on our Pacific side of the hydrosphere on the equator and about 600 miles west of Ecuador to which country they belong.

Each barren slag dump has been named for a saint and a king but still grumbles continually. They are so barren that some of their trees require fifty roots to support them, and others cannot afford to sustain leaves.

Their pleistocene fauna are praised like first editions for their obsolescence. The scientists are scratching them for crabs, and their birds show signs of sprouting wings, while their tortoise population is progressing toward extermination with a velocity excessive for its kind. Their lizards must have become discouraged as they are returning to the sea for sustenance.

God has not forgotten them, for they are blest with tourists in their season.

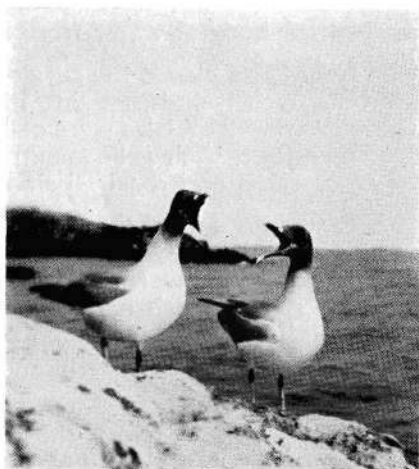
They consist of six principal islands, nine smaller ones and many islets. With the exception of a few fragments of granite, they consist entirely of lava and sandstone. They are said to contain over 2000 volcanic craters, Albemarle the largest, is 72 miles long and one of its three principal craters is over 5000 feet high. Above 2500 they are, in the rainy season, almost continually enveloped in clouds. They are very similar in that they all consist of volcanic cones either dis-

crete or coalescing, like the humps on a camel or the ridges of a caterpillar. A marked difference, however, exists between the north and south side of the islands.

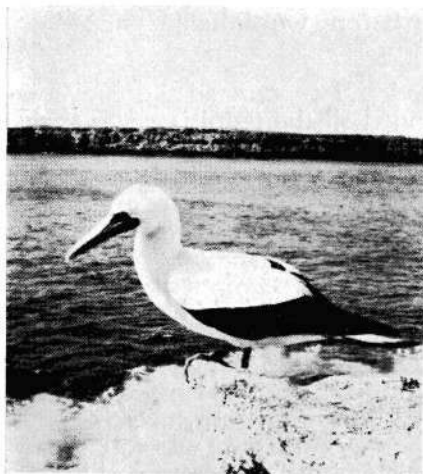
The south sides are covered with some soil and vegetation, while the north slopes are principally uncovered lava. From the crevasses spring some underbrush. Generally the lowlands are parched and barren with only a few thickets of cacti and stunted brush, though some of the larger islands have occasional lagoons or tide pools fringed with mangrove trees or shrubs. Above at about 800 feet, is a zone of rich vegetation consisting of a low wood and thick tufted grass. This grass extends far above the incidence of trees. Large quantities of sulphur and guano are exported and Charles Island has some mineral springs and phosphate of lime. Some cattle, goats, horses and pigs



Male Frigate Bird, Red Pouch Inflated



Galapagos Gulls



Booby Bird of South Seas



Flightless Cormorant of James Island

were landed at Santa Maria, San Cristobal and Isabel Islands and now number many thousands. The islands produce sugar cane, cotton, vegetables and fruits of all kinds, also grain, except rice. The principal exports are hides, sugar, rum, vegetables and fruit. Water is found on many of the islands in the rainy season. Fish of many kinds are plentiful.

The currents about these islands are remarkable, for in addition to their velocity, which is from one to two and one-half knots and usually toward the northwest, there is a surprising difference in temperature of the bodies of water moving within a few miles of each other. On one side of Albemarle the temperature of the water a foot below the surface may be 80°, while on the other it would be but 60°. These differences are due to the cold currents from the southward along the coast of Chile and Peru, which at the Galapagos meets the warmer body of water from Panama.

Near Cape Blanco the current leaves the coast and moves toward the Galapagos Islands, passing them on both north and south sides. These "enchanted" isles were often visited by the Spaniards when, in need of refuge, their galleons dropped in to replenish their supply of water or clean and repair their hulls.

It was on one of these visits that the English buccaneers Cook and Eaton, in 1684, when pressed by the Spanish fleet, retired to store their ill-gotten plunder for future needs. It was on this occasion that Crowder gave English names to the islands. They obtained wood, water and numerous mammoth land and sea turtles, birds and iguanas of enormous size which were grateful adjuncts to their larder.

Here in 1705 the seamen of the sea-rover Rogers, held a turtle catching contest, in which those of the "Duchess" caught 150 land and sea turtles but they were not so large as those caught by the "Duke's" men, who took only land turtles.

Friday, January 12th, King Neptune called and made his nefarious demands, a good two days before we actually crossed the equator.

At breakfast his agent appeared and announced the convening of his court at 9 o'clock and summoned all the uninitiated to appear on the quarterdeck in shorts or bathing suits. There convened were Captain Hancock as King Neptune, with Ray Elliott his daughter; Dr. Palmer his chief clerk and Mr. Garth secretary, also many attendants, deputies, cameramen, etc. On time were the culprits, except for a young Dane fiddler, who caused considerable anxiety by his absence. The ship was thoroughly searched several times, when at last he was found in a laundry sack, where he was unable to hold his breath long enough to avoid detection. He received special penalties for his evasion. The sentence was universally "Give him the works," and the usual penalties of lathering with thin dough and shaving with a wooden razor followed by immersion was meted out, except to one Johnson, our continuity man, who upon examination, was found to be absent-minded and therefore his body resisted the more and he was thoroughly anesthetized with a soft club before his tonsorial attention

was received. The fiddler was bereft of his shorts and his self-respect—the former he recovered after court adjourned.

Wenman Island of this group at $1^{\circ}25'N.$, $91^{\circ}49'W.$, was our first landfall at 10:30 a.m. It was evidently half the crater of an immense volcano, and as it protrudes from the verdant turmoil it resembles an unmanicured toenail.

The engines were stopped while the boats were launched and the scientific group landed. Captain, Charley and I went fishing. We caught six wahoos $4\frac{1}{2}$ to 5 feet long, two small blue fin tuna and about 200 pounds of groupers. The wahoo has the appearance of a giant barracuda and is very fast. Its fight is staged mostly above water where it often scoots along on its tail, shaking its head to dislodge the hook. It is a prime light tackle fish and excellent eating.

All day was clear and comfortable with the mercury not above 73° . The scientists seemed satisfied with the results of their dredging and we certainly had fish enough for Dr. Manter's search for intestinal parasites, to our next stop. We had our fun and the sharks became too thick for comfort, so at 10 p.m. the Diesels began to hum on compass course 156 and we were bound for Albemarle, the largest of the group.

At 8 a.m. of the 13th, with a clear sky and smooth sea we dropped anchor on the northeast coast of Albemarle at $0^{\circ}\frac{1}{2}'N.$, and $91^{\circ}16'W.$ It was about 78° and a pleasant breeze as usual among the Galapagos.

The surrounding water was a veritable menagerie as was the land a curiosity. Small craters and lava tubes with sheets of lava rock on edge nearly interdict locomotion, except with the felt soled shoes brought for the purpose, and these melt away against the sharp edges.

Crevasses opened two or more feet deep like those of a glacier. The tide pools were so recently formed as to be sterile, the bursa brush and cacti were well started in the low places. The beach was teeming with sea lions, sea turtles, sea iguanas, crabs and herring, and to top the list, we were compelled to circumnavigate a giant manta, which took occasion to turn over just in advance of our skiff. The flightless cormorant shook its tiny wing sprouts in protest when we stirred it up for a little action, as none of them seemed to mind our presence. A sea lion nursing her young deigned to look over her shoulder as we snapped a closeup of her domestic activity.

A half day in these surroundings burns up a pile of films, as one never seems to know when to stop. It was fun to grab the iguanas by the tail and throw them out in the lagoon to see them race back to our feet to be thrown again. We could set them up facing one another and start a fight at will.

Now that we have been out two weeks it is proper to note that the use of the razor has been somewhat neglected. The Captain sports a very creditable mustache which Emory Johnson, our continuity man, is training for him in such a racy form that I am morally

sure he will never dare show it at home. Emory has blocked out a mustache and square beard which suggests preparation for a character part in a Hindu cinema. Ray Elliott and Charley Swett have developed enough auburn fuzz on their upper lips to betray their masculinity. Our two German scientists, Schmidt and Fred Z. have markers out for mustaches and VanDykes, while even John Garth has enough hair on his upper lip to shade his lower and render no longer necessary the protecting unguent he has been using for sunburn. Even the Doctor is coaxing his goatee into a square beard of white. Professor Taylor's little black mustache is almost worthy of mention. I think without doubt the absence of ladies is the reason for this gross neglect of the male toilet so common in polite society.

Albemarle has the gross appearance of a much disheveled reclining lady with a boil on her hip, but seems to be at rest with her head on the equator. This boil is emitting dense white smoke or steam, at five places, as we train our glasses on it just below its cloud-capped summit.

In fact, the island consists of the coalescence of four volcanoes, whose summits are 4000, 4000, 3780 and 4220 feet high respectively from north to south and all usually wreathed in cloud above the 2000 foot level. The south side is exposed to the trade wind and seems to have plenty of rain, as it sustains a thick vegetation, consisting of dense wood of the bursa type and a coarse grass which supports many cattle, the descendants of stock left there by early navigators. The west and northeastern sides are covered with sheets of recent lava-flow and pock-marked with sub-craters.

Sunday, the 14th, we weighed anchor for Tagus Cove on the west side of Albemarle, just across from Narborough Island, the neatest, safest little harbor in the world. It is a deep "V" in the bend of the island on a straight line between two islands and protected by both. It is five minutes south of the equator. As we had heard of the presence of penguins seen here by fishermen, Swett, Garth, Johnson, Carl, Elliott and I were let out in the fish boat to follow down close to the coast and train our glasses on the water's edge in search of them. Thus we crossed the equator in the small boat following the Velero to the cove. It was a glorious day and we saw everything but penguins, including iguana, sea lions, heron, some new kind of crabs,



Ray Elliott With Marine Iguano

and manta so thick it was precarious to move the boat. They were playing and often jumping several feet out of the water. Many of them were as large as a double garage door. The key to my camera began to slip about the most interesting time and that evening Carl made me a new one.

Sunday, January 14th, another fine day with a noon temperature of 76° , was spent in Tagus Cove but a party of us took a small boat across the strait to Narborough.

Narborough's summit is 4320 feet above sea level and the eastern surface which we visited consists of a many branched crevasse, and many broken sheets of nearly fresh lava.

We caught a large tortoise, such as combs are made of, and in the evening I dressed it for mounting.

The boys at the boat caught a 14-foot shark and hung it on a davit. A fish boat from San Diego, California, spent the night in the cove and as she was leaving for the north the next day, we all wrote letters home.

Monday was clear, sea smooth and thermometer 83° while we remained at Tagus Cove. The engineers removed a part of one of the shafts to replace a belt used to take off power for electric generation. The scientists explored the coast to the south, some of us went fishing and others sorted over the collections of the past twenty-four hours.

At 5:15 on Tuesday (the 16th), we weighed anchor for the Valley of the Moon on the southwest corner of Albemarle and arrived at about 6:30 a.m. The Valley of the Moon is the most desolate spot I have ever seen and is well named. It consists of rough black cups running into each other as far as one can see. It is of interest principally because of its ugliness. It is an impassable mass of broken sheets of slag, edge up, and so fragile and brittle that the most solid appearing will let you through like the roof of a glass house.

Swett and Elliott nearly drowned landing but managed to keep their cameras dry, however, we land these in a waterproof sack or screw cap container under the skiff seat. Our call was mostly for photographs.

At two p.m. we weighed anchor for Black Beach, Charles Island, at $1^{\circ}15'S.$, $90^{\circ}25'W.$, where we were fast at four p.m. The Captain blew the whistle for the Ritters who, two miles up the mountain, soon responded with a sheet on the fence which was clearly visible from aboard. We watched them come down the trail and Captain and Charley met them with the small boat.

Charles Island consists of a single volcano 1780 feet high, with several smaller blowouts over its sides, giving a decidedly lumpy appearance. It is 26 miles in circumference and seems to have yielded more to erosion than the others we have contacted, however, the northwestern side is very dry and barren. There are said to be nearly 2000 head of cattle; pigs and goats are also abundant.

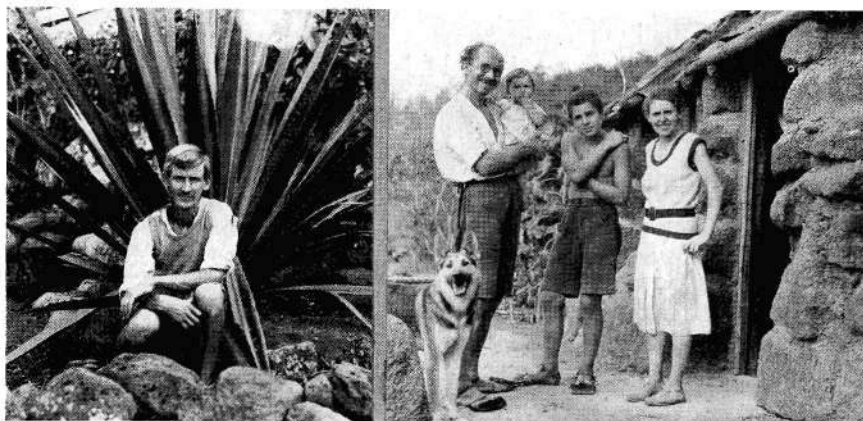
The two safe anchorages are Postoffice Bay on the northern

POPULATION OF CHARLES ISLAND



Dr. Ritter, Dore and Captain at Ritter Home

Phillipson and the Baroness Wagner



Alfred R. Lorenz

The Wittmer Family at Home

side, and Black Beach on the west. There is an abundance of water in three places on the island each of which is claimed by a squatter.

One about two miles east of Black Beach was once occupied by an Equadorean Penal Colony and here many useful fruit trees were cultivated, as the banana, papaya, avocado, orange, etc. Here live the Ritters, or more properly, Dr. Ritter and Doré. They have cultivated over an acre of land and raise a large variety of vegetables, including sugar cane, pineapples and several not familiar to me. They also have a few chickens whose eggs add largely to their diet.

They have built a small house in the shape of a shed which is all that is necessary in the tropic climate.

About two miles farther up the trail between the hills dwell the Baroness and her two male associates, in much more pretentious quarters, constructed by themselves and also surrounded by a small forest of fruit trees. Still farther from the beach is the home of a German, Mr. Wittmer, his wife and two children.

These are all the population of the island but much is the publicity they have had, largely because of the writings of Dr. Ritter.

Wednesday, the 17th, was clear except for the usual haze about the summits of the volcanoes. The sea was smooth and temperature but 72°. Most of the party started out early, up the two mile trail to the Ritter's. It led tortuously around boulders of volcanic rock and under a forest of bursa trees about the size of the orange tree, but with nearly white bark and very sparse, small leaves. Considerable coarse grass furnished fair forage for the many animals of which we saw traces in the shape of tracks and dung.

At last we arrived at a wire fence enclosure surrounding a denser and greener acre or more of fruit trees neatly husbanded. The bars were down to the lower one, which seemed fixed.

The house consisted of a corrugated iron roof enclosed on the upper north and east sides but quite open to the south and west. In the closed corner a screened room contained the bed, a considerable library and dressing table. The remaining shelter on one side contained a table covered with fruit and under a bench was a ripening bunch of bananas. On the other side were a cook (wood) stove and many shelves neatly filled with cooking utensils and a few dishes. From here the Black Beach was clearly in view and at a much less distance than by trail.

A small arch kettle graced a rocky furnace to the seaward, near a chopping block, and a peculiar wheelbarrow which had never had a tire or felly, but was supposed to roll on the end of the spokes (probably unfinished). Under a large fruit tree was a very ingenious press for the extraction of the juice of sugar cane, of which a considerable quantity stood with the pineapples and other vegetables up the hill from the house. A little to the seaward was a double enclosure of neat wire fence containing chickens on one side, while the other had been occupied by burros. One small one followed Doré around like a dog. The kettle and other cooking utensils were of stainless steel and shined in good housewifely fashion. Dr. Ritter and Doré were good hosts and treated us with strange but luscious fruit, and carefully demonstrated their mode of making sugar and utilizing other improvised utilities. Many photographs were taken and we returned to the boat for lunch. Doré needed some teeth extracted but we were without the proper forceps which, however, Dr. Ritter thought he had and would bring to the boat where I had plenty of anesthesia, so we promised to whistle again before leaving.

Thursday, the 18th, was another clear perfect day, with a tem-

perature not exceeding 72°, and a smooth sea. Most of the party decided to trek four miles up to the home of the Baroness so I spent the time with the scientists picking over specimens and reading. They were a weary group when they returned but all seemed to feel repaid and praised the ingenuity with which the home had been made comfortable and artistic. They had also visited the Wittmer family some way beyond and complimented them on their labors in home making.

I saw the Wittmer boy of some 16 years, with a peculiar diminution in the visual area of both eyes but greater in one than the other, which had improved very slightly and gradually since detected. I called it a lack of development of the optic tract. Could promise nothing.

The morning of the 19th the Baroness and her husband, also an Austrian who is employed by them, came aboard. The Baroness seemed an accomplished, comely, quite loquacious, neurotic, unconventional lady who could be very attractive and companionable. She showed much experience in the better social circles, her associates seemed beneath her in social graces.

Charles Island may be geologically dead but a little publicity has betrayed her to the critical scrutiny of the female world. Not because it's not being done elsewhere, but because the doers are beyond the prick of the proverbial hen peck. Criticism is rampant where convention is taboo. (Be patient, ladies, the Baroness has plucked the apple.)

Dr. Ritter and Mr. Wittmer came aboard a few minutes during the forenoon. The Baroness and her friends came and remained on board while we weighed anchor and moved the boat around the island to Postoffice Bay, from which they trudged home. One boat went fishing and the other dredging, while several men went ashore collecting. The temperature did not go above 72° and the humidity was not excessive so we were comfortable all day.

Saturday, the 20th, at 8:30 a.m. anchor was up and we were on our way to Academy Bay, Indefatigable Island, at 47°S., and 90°20'W., about 27 miles north of Chatham. It consists of one large crater rising 2296 feet above the sea. Part of its overflow has been cut off and is known as North and South Seymour, two flat almost barren fields of lava.

Academy Bay is a deep indenture in the southeast coast where a shallow bay forms a good harbor for small craft. Here are sheet iron houses, barns and sheds, one wooden cottage, and one two-story warehouse where fish were being sun-dried. One sailboat and several small skiffs were in the shallow bay. This part of the island has a long stretch of coastal plain consisting of rough lava covered with two varieties of large cacti.

Here upon our arrival were exhibited two very large flags, one Equadorean and one Norwegian, and we found two factions each headed by one of the two white families. One had turtles for sale from the size of your hand to 150 pounds, and the Captain bought

them out by bartering a small boat engine which was very much needed in their fishing business, and to be used in a small sailboat named "DAM FINO." It wasn't so bad at that.

Some of the boys traded cigarettes for small turtles and I bought a very large turtle foot, dressed and cured, for a waste basket. Little scientific work was done here, but the fishing was good, the sky was clear and temperature about 76°.

Sunday, the 21st, at 6 a.m. our hook was up and by 8:30 we were anchored in Wreck Bay, Chatham Island, at 53°S., and 89°39'W. In passing we sighted Barrington Island, small, flat and cactus covered.

Chatham Island floats on the brine like a camel's back. It has two gnarly craters, 1927 and 710 feet high respectively and between, a saddleback usually bathed in mist, which accounts for the presence of sufficient moisture for agriculture. Here are supported the 750 Equadoreans forming the village of Progresso.

Wreck Bay is a rather deep, well protected coast indentation with a wharf, warehouse, blockhouse with small tower, and several native cottages, port officer and assistant and a few other semi-official looking people. They were very cordial and easy to trade with. I saw a young man with a large granulating wound on the top of his foot, caused by a machete; also one granulating and undressed on the sole of the foot of a boy. Both were covered with flies but seemed protected from further infection. The conditions present made any kind of advice seem impossible of following so I let it go at that.

News reached the town of Progresso of the presence of a doctor in port and a very intelligent, much uniformed health officer called on me and told me his troubles. There was in the town an epidemic of amoebic dysentery with eighteen very ill and two dead. There was no doctor, but he had been giving hypodermics of emetine. We planned a proper safeguard of water by picketing the watershed and boiling the water, decided to isolate in a few houses the known cases under instructed care, with chlorid of lime for disinfecting excreta, and bi-chlorid—which we furnished—for hand wash. I dictated through interpreter Garth who wrote and read back to me.

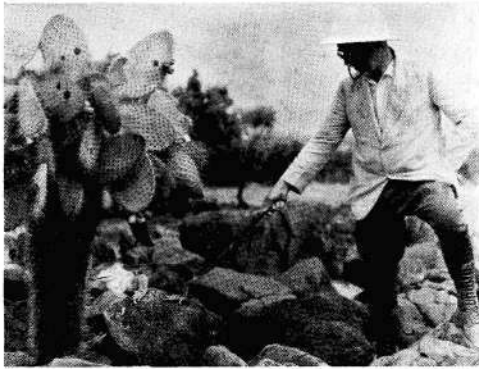
His next problem was an epidemic of smallpox with no vaccine. We were also out. However, after long questioning I decided that as the eruptions were not all of a kind at the same time, but with several stages of the lesion on the body simultaneously, that we had chicken pox to deal with, so advised segregation, which he informed me was impossible because of native superstition. That was his problem and he was very grateful for the advice.

The day was perfect and temperature 78° without sufficient humidity to be unpleasant.

At 6:30 on the 22nd, we raised the hook and by 10:30 were at South Seymour Island, a detached level portion of the lava flow of Indefatigable Island, at 27°S., 90°18'W.

From here we had removed to North Seymour 72 land iguanas

in 1932 for lack of food, but today the



Dr. Palmer With Land Iguano at Cactus on Which It Lives

vegetation was very fair and there seemed to be no dearth of iguanas of which we took many pictures, and several were taken for mounting. The temperature reached 81° today and with slight rain, the sea was so sloppy as to make it necessary to move the ship.

At 5 p.m. we were off for Sullivan Bay, Bartholomew Island, 18° S., 90° - $34'$ W., a small islet off the east side of James Island, where we arrived at 8:30 a.m. on the 23rd. The collecting was satisfactory to our scientists but we were

more particularly impressed with the picturesqueness of the shore line. A tall standing lava rock as though sliced from the end of a lava flow was particularly impressive, and the short, acutely curved, sandy beach backed by the most gnarly lava flow which crevassed, tunneled, pocked and pitted its way to a tall central crater, made a complete miniature of the entire group of islands.

Fishing was good. If I could make but one call at the Galapagos Sullivan Bay would be my choice.

James Island at 15° S., 90° $52'$ W., consists of a crater 2700 feet high and a blowout on its south side at the 1000 foot level. The crater contains a salt lake from which salt may be obtained. It is sufficiently humid for vegetation above the 300 foot line but raw lava below, except for a few cacti and balsa trees.

At 6 a.m. of the 24th, our Diesels began to hum and by the time breakfast was over we had passed around the north end of James and cast anchor in James Bay, a well protected anchorage opposite a large lagoon behind a long sandy beach. The lagoon is surrounded by low brush and crossed by a bar of firm soil. In our 1932 trip we had shot teal ducks here and secured many crabs. Charles called with some of the boys and found a large flock of flamingoes. Later in the afternoon Elliott, Salsbury and I dropped in on them and took many pictures before scaring them. Then the boys succeeded in catching a young one which we

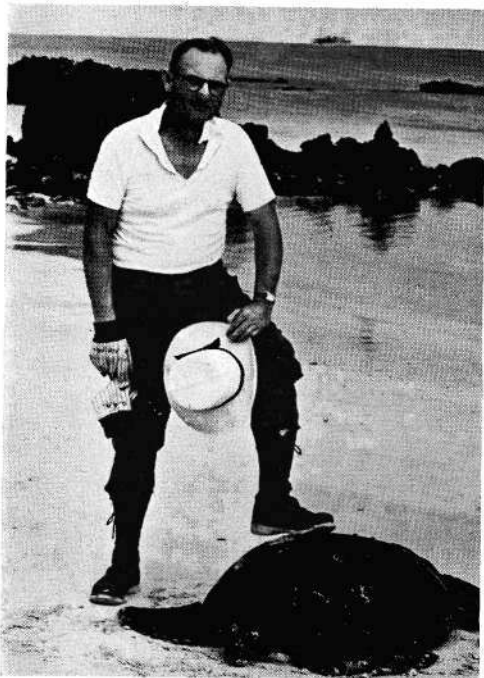


Flamingo at James Island

caged on the boat for study and further photographs. Later Charley and I put it ashore with a large flock in a lagoon on Charles Island.

Scientists were all happy as both dredging and shore collecting were rich in specimens. Though the temperature was 80° the humidity was not excessive and all were comfortable in shorts.

Again on the 25th we were off at 6:30, and this time for Car-tago Bay at 34°S., 90°65'W., on the east side of Albemarle Island, east of its southern crater, where within about three miles of us five separate vents were throwing out white smoke or steam. The bay was so full of mantas or giant rays that it was thought to be the time to bring in a specimen for a study of the parasites in its intestinal tract and to clear up some points on its anatomy, the special work of Dr. Manter.



Captain's Tortoise

One end of a 300-foot line was attached to a hinged harpoon point and the other to a 32-gallon empty barrel. The spear point was fitted to a long stiff pole, Carl stood on the bow of the fast fish boat and selecting one of the larger ones, directed Charles who ran the boat. When over the one selected, he threw the harpoon into its back, which was just beneath the surface, and the fight was on. Off went the line as the great fish sounded, then the barrel followed it overboard and down out of sight for a few minutes, then half in sight it went racing through the water, making a wide wake. We followed it from 9:45 a.m. to about eleven, when it slowed down and a skiff was lowered with Smithy

and Carl, who picked up the barrel and drew on the line until near enough to the manta to place another harpoon with its barrel, and then it sounded again with both barrels, but hardly got the second barrel below the surface, as it had the longer line. Again the race through the water, following the two barrels to when they slowed up and again the skiff took the barrels aboard, drawing in on the lines and were towed about, Carl holding the lines as though driving a team of horses, and Smithy steadying the skiff by dragging an oar. We in the launch took many feet of m.p. film while we followed behind and at the side of the racers. Several other manta kept company with the one on the line for awhile and with each of their two lateral fins.

cutting the water they looked like a chariot race.

At 2:15 or four hours and thirty minutes after the first harpoon, we began to do the towing and brought it to the ship, where we drew it up on a davit. Its cross measurement was a little over 14 feet. It was carefully dissected. The entire intestine was investigated for intestinal parasites and to determine the kind of food it lived on. The mouth would hold two men but the throat would hardly admit a hand; the intestine contained one live sucker fish about a foot long which Dr. Manter thinks got in accidentally during the fight, as the remainder of the contents seemed to consist entirely of plankton and very fine crustacea, except for several tapeworms. The big bowel was only about two feet long, but was seven inches in diameter and contained 45 baffle boards or immense washers like a Ford muffler, with a central circular opening in each and a large papilla on the border of each aperture. This arrangement serves the purpose of retarding the contents for longer digestive action and absorption. Other species of this family have a spiral baffle board in the colon instead of successive disks. The precise condition was not reported in the books on the subject which we had aboard.



Manta or Giant Ray, 14 Feet Across Back

Friday, the 26th, the anchor was up at 6:30 and at 2 p.m. we were again anchored in Postoffice Bay, Charles Island, $1^{\circ}15'S.$, and $90^{\circ}15'W.$

There was music below. Top sides were Dr. Manter perusing trematodes and other piscatorial parasites, Dr. Frazier watching hydroids climb their family trees, Dr. Schmidt sorting crabs and canning other crustacea, John Garth stuffing booby birds, Fred Ziessemme classifying sea anemones and sea cucumbers, Dr. Taylor pressing algae and other marine plants. Next door Charles Swett was photographing microscopic marine life and Emil Johnson developing films and contriving continuity, while I pinned starfish and crabs to sheet cork for the photographer. And so passed the day.

Saturday, the 27th, 6 a.m. weighed anchor and to sea to dredge at $1^{\circ}5'S.$, $90^{\circ}30'W.$ Captain, Charles and I caught a box of groupers, skipjack and bonita. Carl threw a harpoon into a porpoise and after it drew a barrel of air about for an hour, and a skiff for another, the harpoon pulled out and we returned to Postoffice Bay without it. The day was comfortable at 77° with fine breeze.

Six a.m. on the 28th, anchor up and we returned to Black Beach and whistled twice for the population.

During the night a 100-foot Catch, with nine men and one woman aboard, anchored in the bay.

During the day a party trekked up the mountain to the Baroness'

and took many pictures while I spent the day reading, copying some of the coast pilot and doing up my washing. I had much the best of it as the temperature went up to 82° and the boys returned pretty well fagged.

A Danish reporter from the Catch in Postoffice Bay called at the ship and invited us to visit them. He lunched with us, spoke good English and was very interesting. The party are on a scientific cruise with two professors.

Monday, January 29th, was fair and comfortable with a maximum temperature of 81° and a large day was planned. At 6:30 the anchor was up and the ship returned to Postoffice Bay where the Baroness and her consorts arrived at 9 a.m. and were soon off again with the photographers who had planned a scenario in which they were to figure in more or less of a pirate role. Much costuming had been arranged on board the night before. On their return we learned that all had gone exceptionally well so we have much to expect when the picture is released. Swett was cameraman, Johnson on continuity and costuming, and Ray Elliott took a secondary female part in spite of his miniature and as yet colorless mustache.

The scientists went tidepool and lagoon hunting and dredging while a small party were ashore to explore a lava tube or cave just back of Postoffice Bay. This proved to be about 100 feet deep and from its opening ran about 400 feet toward the shore and down to water through a more or less tortuous but roomy cavity, except in one neck where it was necessary to stoop and crawl over loose lava rock. The cave was empty except for the blanched skeletons of several giant turtles which had probably fallen in the precipitous opening and starved to death.

We then visited the Danish Catch which carried an auxiliary engine and was very cozily arranged for the work at hand. We were surprised to see how many could be comfortable in so little space.

Tuesday, the 30th, and 84° in the shade at 8 a.m., we weigh anchor for Black Beach where we pick up the Ritters and return to Postoffice Bay. Dr. Ritter brought a pair of dental forceps made for the front single prong teeth, and a couple of small bone chisels and turned Doré over to me. My worst problem was a septic root of an upper incisor which with local novocaine I was able to chisel out, scrape out and iodize. Next came the necessity of blocking both lower dental nerves and extracting three lower incisors, a lower canine and two bicuspids, all with cavities.

Next was a consultation about upper last molars or wisdom teeth, for which I had no suitable forceps and no great desire to leave roots, but the wisdom teeth lost as the doctor intended to make plates for both jaws. We gave her three hours' rest and time to eliminate some of the novocaine she had aboard while we went fishing.

While Doré slept we had lunch and Charley, Carl, Elliott and I went porpoise fishing as the bay seemed alive with them, and Dr. Manter wished to study the porpoise trematodes. We started out in the twin-screw fish boat with Carl on the bow, harpoon in hand. To it was attached 100 fathoms of half inch line and a 15-gallon empty barrel. We were among them right away, up and down, up and down, like a beautiful ten-horse span of dapple grays before a

chariot. Finally Carl selected the largest and with all his strength threw the harpoon. First there was a great splash and then the coiled line went off the boat like a shot and into the water went the barrel, out of sight for a few minutes. Then we saw it rushing through the water about 100 feet away with a wake like a steamer. The game was on. On went the barrel and before it the splash and rise and fall of 100 or more dorsal fins, for the whole school followed the one with the harpoon. After two hours of following the barrel it began to slow down and we let Carl and Smithy over in the skiff. They soon picked up the barrel and shortened the line while the porpoise increased its speed, dragging the skiff backward, with Carl driving and Smithy steadying its course with the oar. Finally at the end of the third hour we in the launch were able to pull up to the side of the race and Charley placed a 30-30 bullet in a vital spot and it was all over. We dragged it to the ship and suspended it on a davit. Dr. Manter examined the intestines, Eric the cook took off some steaks for the mess and Dr. Schmidt cleaned the skeleton for mounting in the Smithsonian Institution in Washington. The meat was much like duck, dove breast or beefsteak in color and tasted like duck. All partook except Charley and agreed it was good.

When we returned I blocked both of Doré's upper maxillary nerves and was fortunate to get both the sound wisdom teeth whole the first time. I had her lie down for an hour, but about this time another and larger boat arrived in the harbor and she must visit it.

It was soon after noon when the "Stellar Polaris," a 400 foot Diesel cruiser or converted yacht, with a load of excursionists arrived, including a lady from San Francisco who recognized the Velero III and called on the Captain. That rated an invitation for the Captain to show his pictures and for us all to call and meet the guests of the ship. Cocktails and fizzes were the order of the day. There were eighty typical tourists from New York and Boston.

Our two young men were very much impressed with two fair young things and withdrew with difficulty when the show was over. The 'Polaris' pulled out that night. We returned to the Velero at 6:30 and after dinner the Ritters were taken to Black Beach with the small boat. Everyone returned to shorts from afternoon tea togs and enjoyed the evening concert at ease.

Wednesday, the 31st, was clear with smooth sea and comfortable with temperature but 76°, and at 4:30 we weighed anchor for Hood Island which lies 25 miles east and a little south of Charles Island and is the southeasterly of the Galapagos group. It has the gross appearance of a slightly overdone, much-ruffled griddle cake with a few bubbles. It is much flatter than the other islands we have visited, not exceeding 640 feet in altitude, covered with small sun-burned brush wood and surrounded by a bold rocky shore. On its northwest side and more particularly at 1°25'S., and 89°46'W., we found a short sandy beach and dropped anchor. All hands began their investigations in each their particular way. Charley, Johnson, Elliott and I visited the nine native fishermen who were drying their catch on the shore. They were out of fresh water and as Captain was fishing with great luck he gave them a cask of water and also a box of fish, while we

photographed them and their outfit. They had a lean-to with many goats and kids as well as several large turtles, staked out and covered from the sun with strips of burlap over bushes. Their clothing was nondescript to say the least, and as for front teeth I have never seen so few per capita. The sea and cove with the outstanding rocks, and the Velero between, were a beautiful panorama which cost us considerable film.

These toothless fishermen we are told, are descendents of a proud, ancient South American race which at one time dwelt in a small town to which was sent a royal messenger from a very unpopular monarch. The messenger was killed and the monarch being unable to acquire any evidence as to the identity of the assassins caused the front teeth of all the male population of the town to be removed. The unpopularity of the monarch made heroes of the toothless men and to date their descendants have had their teeth removed to designate their heroic lineage.

At 6:30 a.m. Thursday, February 1st, we forsook the Galapagos Islands and slid down into the rising sun on compass course 100.

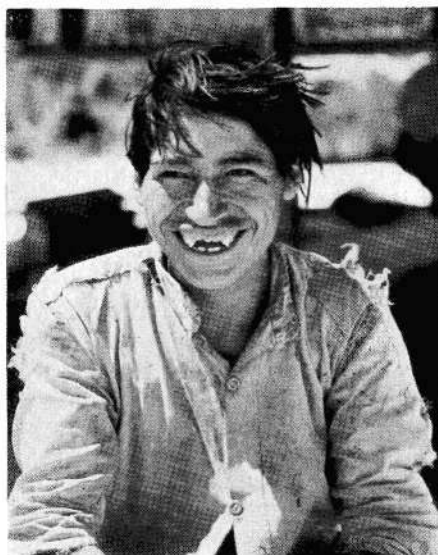
The scientists were sorting specimens, the musicians were practicing, some were reading, Charley was photographing specimens, Johnson was developing films, and as it was 81° in the shade we were all in shorts and shoes only. At noon

we were all at sea but stopped as usual every 100 miles to take samples and temperature of deep sea water. This sample was taken at 1°32'S., 88°49'W.

On Friday, February 2nd, the sea was smooth and sky clear except for a few strata on the horizon, temperature 82° at noon. We stopped for temperature and specimens of deep sea water at 1°22'30"S., 84°38'30"W., and resumed our C.C. of 100. As of yesterday, all were busy or reading. I have been typing numbers and titles to Charley's photos most of the a.m.

My only excuse for not introducing our second degree men before is that I did not know them myself, but now after two months as shipmates they seem more or less familiar.

Dr. Waldo L. S. Schmidt, Zoologist to the U. S. National Museum at Washington, should be mentioned first as it was he who organized this flock of mudrakers. He is studying crustacea. I believe he would hold up a funeral procession to scratch for a crab



Hood Island Fisherman of Heroic Ancestry

The amount of beautiful coral he has smashed up in their quest would give a heartache to the esthetic. He says once a fisherman asked him where a certain crab could be found in large numbers so now he will leave no stone unturned to locate all crabs. He is still a young man—I do not mean to imply that he is ever still—he can always think of something more to do just as the anchor goes up.

Dr. C. McLain Frazier, Professor of Biology at the University of British Columbia, is himself a rare specimen, combining the inveterate humorist with the English dialect (I mean English, regular beef-eater). He is making a study of the genealogy of hydroids. Hydroids are aristocratic submarine animals that, like coral, are often dependent on their ancestors' through many generations. The Doctor's table talk is not only illuminating but often scintillating, often pun-acious but never pugnacious.

Dr. W. H. Manter, Zoologist of the University of Nebraska, is making a special study of trematodes—intestinal guests or parasites in fishes, of which he has discovered some 100 new species. He has also discovered that the manta or giant ray carries in the terminus of its colon the prototype of a Ford muffler. The scientists are making great inroads into the secrets of marine etiquette. The doctor is brief in stature and conversation, and as we have known him, in costume. His scientific requirements have imposed on us some of the finest marine sport I have known.

Dr. W. R. Taylor, Zoologist, and more particularly Botanist to the University of Michigan, is to us just a marine botanist, and his affinity for little algae has necessitated some of the most arduous of dredging or bottom scratching. He is dark and thin physically, while a certain twinkle in his eye suggests an intellectual depth quite obscured in his conversation. He has furnished our table with orchids during our jungle visits and stored enormous bales of blotting paper in the engine room. I do not remember whether his mustache is older than it looks but it seems to be coming in on the home stretch, lip and lip, with the two-month-olders.

Mr. John Garth, instructor in piano at University of Southern California, justifies his presence by acting in the capacity of pianist, taxidermist, Spanish interpreter, entomologist and lepidopterist—as a lepidopterist he is a perfect Pan. He says that the butterfly has the capacity to enter into the love life of some of our most prized fruits but that their larvae devour the product of their lust, so he is conscientious in his endeavor to stick pins in them.

Mr. Fred Ziessehemme, Associate Entomologist, U. S. C., has the German capacity for work, the sunny disposition to cooperate, and the physical build to carry his point, as well as the nerve to raise a mustache and VanDyke.

Mr. Ray Elliott is our student Zoologist. He pulls a lusty stroke with everyone. He plays juvenile and feminine parts to the Baroness' lead and is juggling a two months' old mustache rather successfully. He proves an apt student in navigation.

At 8:30 a.m. February 3rd, we entered the estuary of the River Guayas, a mile wide expanse of mud and the largest river on the west

coast of South America. Dense clouds obscured the highlands but revealed a tall rocky island with a lighthouse on its summit at port or to the north, while to the south Peru in the dim distance was a low, dense, tropical jungle of bursa enmeshed with vines. The river was the color of mud with current enough to give the appearance of a desert scene, and that accentuated by floating masses of water hyacinths, some with their beautiful purple blossoms and some without. As the tide was low, half of the high tide river was but mud flats and in the channel were many sailboats, with now and then a flock of native dugouts variously rigged, some small with one or two paddlers, others larger with several paddlers and large piles of cargo covered with matting; some with native women passengers carrying umbrellas, as an occasional squall broke between the floods of sunshine. Several of the native dugouts carried small sails and one I noticed had across its bow a long pole on each end of which was lashed the horns of two cattle that were swimming beside the boat, with their tails tied together by a rope crossing the canoe to keep them in line. Behind their rumps were two natives paddling across the stream toward the market. The cattle seemed to be doing their part.

The port or left shore of the river was more formidable with a slight bank occasionally terminating in a low bluff. Beyond one of these was Arena Point and on the banks of an inlet a small village



IN TROPIC SEAS

Standing: Dr. C. McLain Frazier, Captain G. Allan Hancock, Dr. Waldo L. S. Schmidt, Mr. Fred Ziesehemme, Dr. E. O. Palmer, Mr. W. Chas. Swett. Sitting: Dr. W. R. Taylor, Dr. W. H. Manter, Mr. Emil Jensen, Mr. John Garth

where we stopped, whistled, and searched the shore for life. After about a half hour a small motor boat came out and brought us a spherical, jovial native pilot with his younger assistant or apprentice. Charley interpreted the pilot's Spanish. From here on he directed us along a row of debris which marked the river channel up to Guayaquil. We passed several craft larger than our own, two of which were Grace Line passenger and freight boats. Ships with a 26-foot draught make Guayaquil 33 miles from the sea. How they dared to navigate that sea of mud was hard to comprehend. Small river boats go 80 miles upstream from the city. Of course all large boats anchored in the middle of the river. These vast stretches of mud and low jungle are densely inhabited with crocodiles and mosquitos. The sky had been full of sun-kissed cumuli all day and I think I have never seen a more beautiful sight than that of the long row of white, two to four-story buildings on the water front below the beautiful cloud pillars screening the setting sun. At 6 p.m. our hook was down and two boat loads went ashore in the rain. This has been our first day of uncomfortable humidity while the temperature did not go above 83°.

Sunday, the 4th, was a cross between sunshine and drizzle, however, most of us went ashore, changed some money, and photographed between showers.

The Equadorean "sucre" is the unit of exchange and is equal to ten cents in our money; it is divided by the metric system into centavos with many intermediate pieces. Guayaquil is the principal seaport of Ecuador and boasts a population of 100,000. The city has a very substantial river wall its entire length and in about the middle is a stone extension or dock with long stone steps to right and left where craft of varying heights from the water level land their cargo and passengers. At the land end of this is the Customs building where the invader is carefully scrutinized and questioned. Across from the city is a smaller town, the terminus of the railroad to Quito, the capital of the country, which is about two miles straight up and a little east. A motored ferry connects the two cities.

Guayaquil in the main is a clean, well paved city. On its river front street are two square buildings with an arcade running through them in two directions, such as I had first seen in Milan, Italy. One is the National and the other is the Municipal building, each housing offices accordingly. On either side parallel with the river, and at right angles to it for several blocks, is the principal business section, mostly two and three stories with arcades over the sidewalks. On Sunday these appeared to us to be very barny but on Monday with all the metal doors drawn or rolled up they displayed in modern show-cases a good class of merchandise and occasionally a very pretty girl behind the counter, who "no savvy de English," however, in each place of any size some clerk did.

This was of course the place in all the world to buy Panama hats, for but a few miles away and quite inaccessible to the tourist, is Montecito, the city best known all over the world for their manufacture. After careful inquiry we found the most reliable place to do business and that the best hats could be bought there for about two-thirds what we paid for them in Panama two years before. One to

ten dollars was the range with the possibility of spending as much as fifty for some of the texture of a fine linen handkerchief and of no practical use.

One can see in his mind's eye that drama of 1705 when the gallant English thief, Rogers, with his 160 ruffians, stormed this river bank and in a half hour drove the confused Spaniards with their ladies into the swamps behind the city, and there gallantly searched, by patting, the daintily silk clad ladies for their jewelry. We see them racing up the deserted streets to their small force of cannon and blunderbusses in the square, piling their loot in the avenues, and think how wonderful is peace.

Monday a.m. we visited the markets of which there are two, both paved below and iron-roofed above. One in the upper part of the town is quite neat but the one by the river front was bathed below in smooth gray mud due to the fact that the street was in course of repair and was crossed with difficulty on narrow planks and building materials between pools of mud. The rain drizzled most of the day. More interesting were the many kinds of rural equipages coming and going in the vicinity. The market wares were arranged in rows on benches or in stalls according to their kind. Fish on the river; next, meat cut about as in the United States, with very little stripped or jerked as in Mexico, but none refrigerated and all exposed to the flies in a most uninviting manner. Next was the row of smoked and sun-dried meats and fish, among which was the iguana and some small birds and crabs. In the next row was the fruit of which there was a large variety, including many kinds unfamiliar to us. There were pottery, baskets, furniture and yardage, and people so thick as to make progress difficult. Our guide, a very black Jamaican who spoke good English, advised us to look out for pickpockets. However, I heard of but one loss and that might have been mislaid. Live chickens, live pigs and many animals, as monkeys, honey bears, caged birds—parrots and parrakeets—dogs and armadillos as well as turtles were tied or caged among the vegetables. Edible crabs were displayed tied up in bales without cover but with fiber cords, and in what seemed very uncomfortable positions.

The architecture of Equador interested me as very appropriate, considering the material at hand. In the country posts with two-third width mortice in the top, were set in the ground so that four feet protruded. On these were lashed floor sleepers of the same hard wood as the posts. On this was spread strips of slit and opened black palm or bamboo resembling lath in width and distance apart, but only partly separated so as to be handled as slat boards a foot or more wide. Through these and between the short posts the same construction forms the upper floors. The sleepers are lashed to the posts and also to the flooring. Over this is a roof the rafters of which are notched and lashed to the edge sleepers. On these are lashed cross strips of bamboo to which the thatch of palm leaves is also lashed. The lashing is of fiber rope and very strong.

The stairway from ground to floor, or floor to floor, consisted of a 6x6 pole notched about half way through at an angle suitable to its inclination. The side walls were of the same sort of bamboo

slats as the floors. So also were the partitions. The arrangement consisted of two side walls, half a front wall extended as a partition down the center of the first floor to within about two feet of the rear wall, and then across to the right to the width of a door, which was also of bamboo slats upright with fiber lashings for hinges.

Across three feet from the back another partition separated the back porch from the living room. On the back porch was a square box made of bamboo slats and filled with dirt; on this were three large stones, a fire within and an iron kettle on top. The porch was open and from its border were suspended various meat bits and fish for smoking.

The city dwellings and apartments are usually two or three story and of wood. I could not see the timbers and method of framing but noticed that the bamboo was universally used for lath and that they were covered with stucco, consisting of hog or chicken wire and a plaster bond with vegetable fiber. The ceilings were all very high and by law the partitions are but one board thick and can in no case go to the ceiling. This has to do with sanitary regulations, leaving no place for rats.

I visited a hospital built on this plan and it applied to the oper-



**Mr. Garth With Light Tackle Catch
of Cavalla**



Captain and Pets, "Chico" and "Babe"

ating rooms as well. The partitions appeared like redwood. Most heavy building material seemed to be of mahogany. The two government buildings were of reinforced concrete construction on a floating foundation, I was told by an old resident.

We were not bothered with mosquitos in the city but on the river they were fierce, and on the pier we saw cockroaches two inches across and three and one-half from stem to stern. They had wings to boot. Grasshoppers and crickets, three inches from tip to tip, were also abundant. We took aboard an anteater, an armadillo and some small monkeys for protection and the vermin disappeared like a fog in the sun.

I should have mentioned that we, i.e., the Captain for the most part, collected turtles in the Galapagos and at Guayaquil, and it soon became known that we were in the market for animals. The quay became a menagerie—more large turtles, more and more monkeys of more kinds, birds, honey bears, anteaters, armadillos, etc. The Captain arranged for a condor to be brought down from the Andes by a missionary who had failed to convert it and was willing to deliver for a price. It, however, was late and had to be sent by rail to our next port. We had already taken on six very venomous sea serpents and these were augmented by two large bushmasters, the most deadly snakes of the Andes. Our fish tanks were pretty well filled with varicolored fishes for the Steinhart Aquarium so that we were by now quite a menagerie. All the animals were caged or leashed on the upper (boat) deck. There also were the benches where the scientists do their sorting of specimens. The boat hand whose task it was to keep this place clean was heard to say that his job would be easy if we would keep the monkeys and scientists shut up.

Monday, the 5th was fair but sultry and the thermometer at noon stood at 82°. One seemed to be in a perpetual Turkish bath, and as the river was so muddy with the incoming tide, bringing the city's sewage up to us each high tide, our salt showers were not available. Though we had plenty of fresh water from San Pedro for ordinary purposes, we could not use it to cool off in, as we had the salt.

With Dr. Frazier and Dr. Taylor I visited the British consul and found him a very fine type of gentleman with a fund of useful information and incidentally a stack of English and American magazines, which made a short wait very agreeable.

The U. S. consul and his wife invited the Captain and several of us to afternoon tea and we met the assistant consul and his wife also, as well as some other agreeable people including an English speaking son of a missionary, who seemed to be a rather important personage. He and his brothers ran a large commercial business and also a radio broadcasting station, the only one in the city. He proved to be a Rotarian and on learning of the Captain's trio and pictures asked him to give a concert with the pictures under the auspices of the club. The arrangement was concluded and announced as free by radio and newspaper. He and the party came to the boat to see the pictures that he might announce them in Spanish.

I called on the most popular American physician, a Dr. Parker, and visited his office and clinic which is a veritable hospital in the

middle of the city. I found the doctor a jolly good fellow, serious in his good work which includes all specialties. All of ten beds were full, including two laparotomies, one obstetrical case, one tonsillectomy, etc., down the line. He told me he also does cataracts and all sorts of orthopedics, of which he showed me a case. He had a good bedside manner and on the outside found that he treats the English-American population. Operating room and nurses seemed efficient. He told me that amoebic infections are almost 100 per cent of the population, so that except in acute cases it is hardly worth treating. I invited him to the ship but he was tied up and did not come.

Thursday, the 6th, 84° and uncomfortably humid. Several of us started for the country roads leading to the city to photograph the various means of rural transportation coming to and going from the market. We were well repaid and by noon returned. We bought our needs in Panama hats and watched the new animals go aboard. Thursday evening we all went to the concert which took place in the auditorium of the city college.

It was to begin at nine o'clock and we arrived at 8:30 and were unable at first to get in because of the crowd, not only in the auditorium, but out in the street. We introduced ourselves to the police with difficulty, but were finally pushed through and an attempt was made to close the doors, but the crowd overcame the diminutive officers and filled the halls and balcony stairs. Some in the hall stood on chairs which collapsed and made a racket during the music. The audience was no end enthusiastic.

After the pictures, we were all taken to a club on the second floor of a downtown business block and with a jolly crowd of business men were treated with champagne to the point where our better judgment called a halt. Toasts were said and drunk and in the small hours we returned to the boat with many words of appreciation and goodwill. In fact, the meeting adjourned as an international goodwill congress.

A jolly pharmacist told me of the local treatment for the bite of a bushmaster snake of which we had two specimens aboard.

Wednesday a.m., (the 7th), I started ashore early to see the druggist to obtain the necessary treatment for the bushmaster bite, and returned to the ship at once, for according to schedule, our anchor was up at 10:30 and with pilot aboard we were on our way down the Guayas river.

As we passed out of the mouth of the estuary we were pointed out the low coast line of Peru in the distance. When turning north, to starboard was a long serrated row of densely jungle covered foothills backed by a bank of clouds obscuring the lofty Andes we had expected to see. In fact, on only a few brief occasions during our visit to Ecuador did the clouds rise sufficiently to expose a summit line at all comparable with our anticipation, but the beautiful greens and commingling of massive thunderbolts and sunshine quite compensated.

Every man aboard had discarded conventional clothing and returned to shorts and shoes before we reached the sea.

I should have mentioned that we have also with us Al Salsbury,

an affable kid of six feet two, who is slowly learning what it is all about. He loves chicken, particularly the dark meat, and his idea of avoiding intestinal infections is to abstain from eating anything on shore except cheese, which he loves. His dives for coral in shark-infested waters have made him locally famous. Since leaving Guayaquil he has become interested in crustacea.

Emil Jensen, the Danish fiddler, expresses his esthetic sense by wearing undressed kids when bathing. He is the blonde young man with the large eyes, coming down the gangway with his pants in one hand and his shirt in the other. He has just learned that we are going fishing.

Emery Johnson, also six feet, loves cheese as well as chicken with a preference for the dark meat. He simulates the Arab sheik. He becomes their ear and nose rings, bracelets and neck chains. His new mustache and chin whiskers lend confidence to his prophecies. He is truly an artist for which all due credit. His function is developing continuity but as a side line he's "lika" gallery of fine art.

We were at sea all night with power off from 9 p. m. to five a. m. that we might make port at La Libertad, Equador, at 9 a. m. which we did.

La Libertad is a tank town of a British Oil company at 2°12'S., 80°55'W. It has a small wharf and pipe line running to a float some 2000 feet out in the bay. It is connected with Guayaquil by rail and also the oil town of Ancon some ten miles away by rails, on which run a succession of small cars drawn by an automobile engine on car wheels.

Charley, Johnson and I photographed the little native population and their humble habitations all the forenoon, fished a bit in the afternoon and at night accompanied the troubadours to the town of Ancon over the so-called railroad. We stopped several times because of carburetor trouble, or absent-mindedness on the part of the engineer. This car cranked by its own movement, thus when stalled on a level was difficult to start.

We arrived however in plenty of time as the club house janitor was in the act of moving the electric generator from the local moving picture theater to project our pictures. The audience of the entire town of seventy-five Englishmen, their wives and sweethearts, was very enthusiastic. When the concert was formally finished the generating system was not yet installed and our announcer made the rash suggestion that the trio would be pleased to play request numbers. Then the fun began for the requests were not familiar to the trio and substitutes were necessary. Eventually the setup was complete and the show was a profound success. The club had a bar, however, and the members were anxious to reciprocate in beverages which were gratefully received by all but the troupe of entertainers. The auto engine stopped only twice in the ten mile return trip through the jungle.

Friday, the 9th, clear, 84°, and a smooth sea marked the early arrival from Guayaquil of the missionary with a condor and a lady, also the condor agent and his lady, all of whom had breakfast with us.

The condor bit the Captain's finger, and we said goodbye and raised the anchor at two p.m. for a run out to LaPlata Island at 1°16'S., 81°4'W., where we dropped the hook at six p.m.

It was at LaPlata Island where Sir Francis Drake divided the loot he had taken from the Spanish galleon *Cacafuego* in the Bay of San Francisco in 1579. It is also said that because his boat was overloaded he was compelled to throw over many bars of silver.

In 1681, Sharpe, Dampier, Wafer and Ringrose visited LaPlata Island in the "Trinity" and spent some time in attempting to recover that which Drake had discarded, but were unsuccessful. Again in 1864 LaPlata was visited by Captain Eaton in the "Revenge."

LaPlata has the rough appearance of a sea cucumber. It is three and one-half miles long, one and one-half miles wide and 590 feet high at its tallest point, which is graced by a light that should be seen twenty miles in clear weather. It has been wet because it supports a considerable growth of small trees, but that must have been some time back as its color is certainly brown at present.

We anchored off a short sandy beach and on the morning of Saturday, the 10th, visited the lighthouse keeper and his numerous progeny. He and his 14 year old son speak and read Spanish. The daughter of ten summers has chills and fever of the two day type and we supplied them with quinine and directions.

The dredge boat was down most of the day and with a little fishing we managed to keep the scientists happily busy. At three p.m. dredge and anchor up we pulled a little way from shore and proceeded to take deep water specimens and temperatures, and then moved up the coast past a beautiful rolling country lush with tropical vegetation, and an occasional small village each with its church spire and group of bamboo-thatched roof houses well off the ground on posts, as described before. Each village was backed by squares of banana groves usually on rather steep side hills and long level stretches at the summit. Below near the coast were cocoanut palms in groups not as regular as the squares of bananas. From one point I counted 28 groups of these palm-thatched homes surrounded by rectangular patches of cultivation designating the thrifty farmer.

At six p.m., the 11th, we anchored at Manta Bay for the night, and at 12:15 a.m. anchor up, we reached San Francisco Bay 35°N., 80°10'W. Here in 1579 Sir Francis Drake, the gallant English sea rover, attacked in his good ship "The Golden Hind," the Spanish galleon "*Cacafuego*," robbed her of enormous treasure and sent her on to Panama to report to her Spanish authorities.



Equadorean Cocoanuts

This is one of the most beautiful little jungle bordered bays I have ever seen, with its small river oozing in its head around a picturesque point of land shaded with coconut trees and graced with an indolent sailboat lunched over on its side. Here is a neat little village of 15 or 20 bamboo-thatched houses, some four feet from the ground, with pigs, chickens and small children roaming about the grass covered streets, where the older children and young men were kicking a football. Deep in the jungle we were led up the river to a coconut grove where the young men climb for nuts which they open with one slash of the machete for our refreshment. They lead us to a meadow where butterflies may be found and help to catch crickets for Mr. Garth. They were glad to discuss their life and regret that they cannot earn enough to travel and see the world, and we try to tell them that they have everything to make men happy and should be satisfied, as the outside world is no better for them than this beautiful nook where nature brings them all their requirements.

They have sugar cane, bananas, papayas, pineapples, cows, goats, and many fruits with which we are not familiar. We took many pictures and Charley bought some of their coconuts and bananas with cigarettes and empty cans which these people value very highly. They did not know our money.

These Equadoreans do know and practice a very satisfactory form of civic hygiene. Here we first met the lance-shaped canoe paddle and the boys traded for perfect specimens. This was our first stop north of the equator and though the mercury stood at 84° there was no longer the uncomfortable humidity of Guayaquil.

On Monday, the 12th, we raised anchor early and by 8:30 arrived at Gorgona Island off the United States of Colombia, at 30°N., 78°12'W.

Here in June 1680, the brave English marauders Sharpe, Dampier, Wafer and Ringrose cleaned and remodeled their prize galleon, the "Trinity." In 1720, Selvocke, that malicious English thieving seadog put in for wood and water when he learned that a superior force of Spaniards was in his wake. In 1705, Rogers careened his boats, quelled his mutiny and watered and wooded his boats, and sank some thirty tons of Papal bulls, bones and images of the saints, rosaries, religious toys, etc.

Gorgona Island has the appearance of a long, narrow light green sponge floating on a dark green ocean. Its dense tropical foliage reminds me of Baja Honda in Panama, or Cocos Island off Costa Rica. It is 24 miles off Guacoma Point of U. S. of Colombia, and is about five miles long and one and one-half miles wide. It has three peaks in a line, the center one—the highest, has an altitude of 1296 feet. It is well watered and its water is available to the mariner at Watering Bay. It has several short sand beaches and here at Watering we stopped to go fishing and collecting. On the shore were two thatched huts, and in the bay several natives in their dugouts with the Equador-ean lance-shaped paddles.

What interested us most was a school of porpoises of the light mottled variety, which had been ordered by Dr. Manter for study,

and the skeleton for Dr. Schmidt to take back to the museum, so we were off with Smithy and harpoon on the bow. We were soon in the school that bobbed up and down with the utmost grace before our boat.

Having selected his prey Smithy let the harpoon go and off went the rope and barrel out of sight in the bay, and then on with the school making a broad wake which we followed for an hour or so, when from the skiff another harpoon and barrel were launched, and after another hour of chasing and a well placed rifle shot, we dragged it behind the launch home to the ship. The entire school followed us back to the boat as if to help their friend.

Our hook was up at 5 p.m. after a comfortable day with the noon temperature at 89°. At 4 a.m. the cooler of the starboard engine blew out and we continued on with one engine to Cavita Bay at 5°69'N., 77°29'W., where we arrived at 9:15.

Cavita Bay is a deep narrow indentation in a lush dense tropical jungle with several outstanding densely wooded rocky islets and several sand beaches interspersed with rocky promontories and a stream entrance. This made most beautiful scenery and fine collecting for our scientists. Many pictures were taken and the engineers spent the day taking down the cooler, which was recognized as a two days' job. In the evening Dr. Frazier gave a very interesting lantern slide talk on collecting on the shore of British Columbia.

The thermometer had not been caught above 79° today and the humidity was not great partly because there is no low land here. The shore is abrupt in all directions and masked in dense jungle.

Late in the night the engine work was complete and at 5:40 Wednesday morning, the 14th, our hook was up and we were off to a point off shore to take water samples and deep sea temperatures, after which we turned northeast to Port Utria, U.S. of Colombia, 6°N., 77°26'W., our most eastern point of the trip, practically the meridian of Washington.

At luncheon the party was divided as to whether this or our last stop was the most beautiful scenery we had witnessed. The bay is very deep, it is several miles long and about half a mile wide, with rather steep, sloping sides, irregular in outline, and one prominent point on which is the principal settlement. The surrounding foliage is dense, tall and laced together with vines, except at occasional intervals where are sandy beaches, small clearing, and pretty neat native homes surrounded by groves of cocoanuts, bananas and papayas. The boys traded for canoe paddles and calabash, while the boat took on bananas, cocoanuts and papayas. There seemed to be five or six of these homes and orchards which we learned were all owned by members of the same family. The pater familias was the mayor of the principal colony. We called on him officially, as well as socially, and found him very affable. His large family came over home in their canoes and seemed to enjoy our visit as much as we did. They were willing to pose at all their usual tasks and to help us find the best scenes and explain their mode of life. At one hut was a carpenter shop with a lathe, where crosses for burying grounds were made of

the hardest mahogany. The houses were all about four feet from the ground and of the construction previously described, which seemed to us most practical for the climate.

The padre seemed about fifty but said he was sixty-five, and looked to be a Jamaica negro, but his wife was all Colombian and the children had straight hair though rather dark for the Colombian. The old man said his father had lived on the bay all the 90 years of his life and he was born there. It seemed to be an ideal family and an ideal situation for a healthy, happy life. The temperature was 86° but we were all comfortable in our 'briefs.'

Thursday, the 15th, was fair and a comfortable temperature at 90°. We took many pictures while the scientists were on shore collecting and dredging with very satisfactory results, and Charley traded canned goods for bananas, papayas and coconuts.

At five p.m. we weighed anchor for Panama, and after moving out to sea took a compass course of 318. During the evening we had war pictures and music.

Early on the morning of the 16th we sighted the Perles Islands and by 9:30 we cut out power to take on pilot and quarantine officers. We passed quarantine with a clean sheet and were soon at the oil dock taking on fuel and water. The sky was clear except for the occasional small bolus of humidity which in the tropics has a way of stealing up and wetting one between sun baths. The temperature was 80° at noon and several of us went ashore to look over the shops in the interest of our want lists. When we returned we found our ship at Dock 15, Balboa, where we lay during our Canal visit.

As we arrived at the dock the ship's Balboa representative stood above us with a large package of mail which we anxiously awaited while it was sorted and distributed to our rooms by Ray Elliott. This started most of us writing postscripts to our letters before sealing them. No one seemed very much shocked by home news though it had been forty-five days since contact with a postoffice.

Saturday, the 17th, was 84° and sultry, as common in Panama. The Captain accepted an invitation to give a concert and picture show at one of the principal club houses during the afternoon, while most of us spent all the money we had allotted for Panama in the uptown stores.

A group of us took a taxi to Antigua and photographed the ruins left by Morgan in his raids. I found much better roads than when I visited them in 1912 and also found them commercialized, with pavilions for food and curios as well as Panama hats. Many tourists from boats in the harbor were doing as we were.

On the ship all was quiet at 10:30 except for the typewriters. Sunday the 18th was 93° and sultry, and most of us spent the forenoon reading. Some of the scientists, however, visited Barrow, Colorado Island, the national game preserve, with local scientists. After lunch John Garth and I started for a walk which was to terminate

at the Peter Miguel locks, where a chance acquaintance and employee at the lock had promised to show us about.

We had but just left the pier when we were accosted by a man and his son, in their machine, who had seen the pictures the day before and would like to hear more of the Galapagos, so suggested taking us about where we wished to go. This resulted in a comprehensive tour of the city and along the canal and a timely arrival at our appointment. We were grateful and I learned much of the health situation from the gentleman who proved to be on the Zone health force. He later sent me their last reports.

We were shown and demonstrated the workings of the locks and then taken to the gentleman's home where he proved to be a genial host and a butterfly collector, explaining his interest in Garth. They exchanged specimens and his wife served ice cream, cake and orangeade, and then with his car he took us for a long ride out to the Madden dam now under construction on the Chagres river. En route we were shown a bit of the trail over which Morgan crossed the Isthmus to attack old Panama. He then delivered us to the boat shortly after our group had responded to the second dinner gong.

Monday, February 19th, I was up early to go uptown for a last purchase and returned in plenty of time for our departure. It was 93° in the shade and humidity plus when at 10:30 we cast off lines from pier 15, Balboa, and with our pilot slipped out of Panama Bay and all returned to shorts and shoes before the land faded out of sight. Soon the Captain cut out one of the engines that we might not reach our destination before daylight.

The evening was spent mostly in discussing the day and we all turned in early. The Captain received a very fine letter of gratitude from some officers of the club for his entertainment. At daylight of Tuesday, the 20th, we dropped anchor at Jacarita Island not far from a Panama penal colony, at 6°16'N., 81°45'W., and after landing the collectors Elliott and I went fishing and filled a box with cavalla without shark trouble. Then we went chumming for shark and took many pictures of them all around our boat, while Carl threw out and pulled in large hunks of fish meat.

After noon Captain and I went fishing with light tackle and had some fine sport. Captain pulled in a toro that must have weighed over 60 pounds. The toro is related to the cavalla and is just as sporty but not as good to eat.

Little after four our hook was up and we proceeded to Baja Honda at 7°44'N., 81°32'W., where we dropped anchor at six p.m. Temperature had been 86° at noon but we were too pleasantly occupied to notice the heat.

Wednesday, the 21st, was spent in fishing, dredging, shore collecting and trading with the natives. I soon heard the troubles of the town and treated nine cases of malaria and one three-day old rifle wound through the forearm with a nasty infection started. I had to drain. Temperature came down at once and I transferred the case to a pharmacist on a naval surveying boat in the bay. In turn I

saw a suspected appendix among the boys—proved not to be appendicitis. Through our meeting I was invited by the Captain of their boat to go with him and a bunch of his boys manta fishing or hunting. Charley took some of the boys out in our boat to accompany us and see the fight. The result was that the naval boat lost the only manta it harpooned and Charley caught and hung up the largest one I have ever seen—15 feet across—and later showed them how to do it. Nice crowd though.

Thursday, February 22nd (Washington's birthday), found both gunshot wound and appendix cases with normal temperatures, making it seem a little more decent for us to leave, which we did at 12:30 p.m., and moved out about 15 miles to Secca Island at 7°58'W., 82°2'W.

Secca is a small island about five and one-half miles in latitude and three miles in longitude. It is low and its covering of shrubs and trees is very dry, having the appearance of being half dead. Captain and Dr. Manter went fishing and the others went dredging, result—a box full of cavalla and toro of which honors were well divided. Captain caught a fine redsnapper which was the first of its kind this trip—it must have weighed 50 pounds.

I chloroformed a sick monkey and boiled it for the skeleton, to clean which took most of the rest of the day.

Friday, the 23rd, at 10:40 our anchor was up and we took course 259° to the Las Drones Islands, which proved to be but a warning to mariners as they were barren rocks slightly above sea level at 8°52'N., 82°27'W. We passed them and changed our course to 252 up the coast. The scientists were busy with their specimens and most of the rest were reading. Alaska pictures were shown before the evening concert.

Saturday, the 24th, was hot and the mercury at 92° and plenty humid as at 10:50 we pulled into Port Culebra off the coast of Costa Rica, at 10°36'N., 85°40'W.

All morning we had been coasting along the coast of Costa Rica CC 309 to 4 a.m., then 319 to 8 a.m., then 347, passing many outstanding rocks, small islands, large bights and small bays backed by high shoreline, shallow back country and tall conical mountains with their tops blown off, and fairly dense forest. The trees seemed to be 10 to 40 feet high, all turned brown by seasonal drouth.

Captain and I went fishing and filled the fish box in a short time. Captain caught the largest cavalla I ever saw, mine were small but one 20-pound yellow fin tuna gave me a pleasant thrill. During the evening the trio played music donated to them by the Guayaquil club people after the musical there.

Sunday, February 25th, Charles and party went up a small river for crocodiles while Captain and I went fishing—no luck and returned at ten. Charles returned without crocodile but reported seeing honey bear and some sort of fox or coyote. Captain and I went fishing in p.m. and had poor luck.

Monday, the 26th, anchor up at 5:45 a.m., at 6°6', compass

course 306, 7°45'—249, 753, 320. Low range of mountains in the dim distance to starboard; weather clear and sea smooth with temperature at 90° as we passed along the coast to San Salvador. At Carinto, Nicaragua, we were about ten miles out and could see the coastal lowlands backed by a long range of volcanoes, two of which were smoking perceptibly. All who were not practicing on some musical instrument were reading on the quarterdeck or watching the shore line through their glasses.

I have just operated on the antrum of one of our most valuable monkeys, patient and owner doing well. Two men in the forecabin had malaise, temperature and a furred tongue, and got each a dose of salts and a lesson on diet. The sea was smooth, sky clear, temperature 90° and nobody unhappy.

Tuesday, February 27th, at sea on compass course 288, at noon we were opposite San Juan de Guatemala, 13°50'N., 91°W., fair 82° and humid as we compared the long line of cones with their tops blown off in San Salvador with the line of perfect cones in Guatemala. I think these the finest array of cones I have ever seen and just enough smoke here and there to give them away as peace disturbers. It was the eruption of volcano Aqua that caused the people of Guatemala to abandon their ancient rock built capital, now known as Antigua.

As we follow up the coast of Guatemala the mountains recede from the coast line and leave a broad fertile plain with dense vegetation, and along the coast frequent villages each with its spire and group of native palm thatched homes. Between these villages are occasional discrete homes with each its square of vegetation of bananas or cocoanuts, though we know that much sugar and many pineapples are also raised there. At six p.m. we crossed the line separating Guatemala from Mexico and continued on toward the Isthmus of Tehuantepec where we always suspect a storm is brewing. Some of the boys retire disturbed in their minds and we see that those who have not had the experience hear a vivid description of a storm at sea. Some disappointment was expressed by those who had it in for the landlubbers as the night was comparatively quiet and the motion of the ship decorous, though we learned from the watch that the water was over the bow many times during the latter part of the night. All forenoon whitecaps were in evidence and the decks were awash with spray. The log showed where the Captain had turned in closer to shore to avoid the violence of the wind. Morning found us passing the Isthmus. All forenoon we passed tier on tier—tall mountains, their summits in the cloud-banked sky. Their sun-flecked slopes intrigue the eye and far below broad strips of green relieve the sand beach of its sheen.

At three p.m. we were anchored in Tangola-Tangola Bay with the dredge and fish boat down. The collectors were put ashore and the remainder of the party went swimming on one of several beautiful jungle-backed beaches. Here was a wonderfully smooth quartz sand beach, not too steep and not too shallow, and no suggestion of sharks. All voted it the best swim of the trip, for all others were accompanied

with the suspicion that we might lose a leg at any time.

Tangola-Tangola at $15^{\circ}45'N.$, $96^{\circ}5'W.$, is a deep narrow bay with a good shelter. It has abrupt shores except where the sand beaches mark the entrance of surface water; water is deep and clear. Several small dropline fishes were caught but no trial was made for game fish.

Thursday was the first of March, clear, hot and humid. At an early hour a skiff and put-put went out with the shore collectors to take advantage of low tide and returned in time for us to pull out and up the coast at 9:30. The scientists spent the day sorting their loot while we of more leisure watched the beautiful land of Oaxaco, Mexico. The long, broad sandy beach, lush cocconut groves, rolling brown hills and green river beds, tall, rugged brown to deepest blue mountain ridges canopied by sun garnished cumuli.

The sky was clear, the sea smooth and the temperature but 83° when at noon we registered $15^{\circ}37'N.$, $96^{\circ}30'W.$ All forenoon of the 2nd we passed to starboard tier on tier of sun-flecked, cloud-capped mountain ridges as far as eye could see, and palisaded coast lines interspersed with long sand beaches, backed by groves of cocoanuts with each its native huts.

The sea was smooth, temperature 84° and scientists at work on yesterday's collections to 12:30, when our hook went down at Petatlan Bay at $17^{\circ}33'N.$, $101^{\circ}30'W.$, just outside of which stands the White Friar Islands, noted for the wonderful game fishing in their vicinity, and as the habitat of myriads of parrots, the beautiful tropic bird and booby birds.

Mr. Garth and I spent a couple of hours and much film on the large white rocks photographing the birds, and then when attempting to reach our skiff which was being artfully maneuvered by Smithy I slipped on the rocks and so wet my camera that there is doubt of its doing any more work this trip. Besides this it is doubtful if my films are good though removed at once and apparently dry.

The bay is beautiful, deep, and well protected with fine sand beach where we went bathing, and in two fishing trips Captain and I filled our fish boxes with toro, runner and redsnapper. These, by the way, are a beautiful red fish weighing in the neighborhood of 50

pounds and belong to the same family as the jew fish of the Catalina waters. We also caught the giant barracuda and saw many huge turtles for which these waters are famous. The booby birds were the menace here as they would take our lures out of the water, and for that purpose would follow us in flocks of a hundred or more so that we could not protect our bait with sinkers weighing several ounces. I guess we took from our hooks a dozen of these birds. Most of them were snagged in the neck or wing.



Tropic Birds at White Friars Island

The dredging was so profitable that the Captain decided to spend the forenoon of the third at it while he and I went fishing. My catch was 4 booby birds, 3 toro and 4 sierras which are runners like our yellowtail and of the same family. At 1:47 with boats and anchor up we started out to sea and were soon on compass course 285.

On Sunday, the 4th of March, at 7:14 a.m., after a full year of Roosevelt's guessing with elastic money and increasing deficits, we anchored in Tenacatita Bay at 19°17'N., 104°52'W., one of the most beautiful notches of the sea I have known. Its two long sand beaches are backed by deep groves of beautiful palms some 75 feet tall and as straight as an arrow, little or no underbrush, the ground strewn with nuts the size of butternuts and so rich in oil as to be one of the most valuable contributions to American oleomargarine. The native huts were of the usual Mexican peon variety, thatched on posts with earth for floor, beds on crotched sticks, stove of clay on a table, and corn grinder of stone. The harvest time had arrived and burros were being packed for market while the nuts were being cracked and shucked. Fishing and swimming were fine.

The sand beach, however, in places, resembled oil sand, and there were no live shell fishes found which made me wonder if this place may not some time produce oil.

Late in the evening the anchor came up and at 8 a.m. on the 5th we were anchored at Isabel Island at 21°52'N., 105°53'W., in the lower stretches of the Gulf of California. All the scientists attacked the island in the usual way—dredge, pick, forceps and nets, not to mention cameras, and Captain and I went fishing. We saw manta, whale, turtle, frigate birds, boobies, pelicans, terns and the beautiful bos'n bird, and caught mackerel, toro, runners, skipjacks and booby birds and called it a day, as we had fish enough to keep Dr. Manter busy. At one border of this island—or I should say just off the border—stand two rocks that from one direction so simulate a swan as to seem carved by man.

On the island were some fishermen who were catching sharks and said their fins, meat and skins netted them \$8.00 a fish. All they needed was fresh water so the Captain filled their cask and had their goodwill. 11:52 p.m. our anchor was up and on course 285 we sought Cape San Lucas.

On the morning of March 6th we were in the middle of the mouth of the Bay of California, with a smooth, perfectly indigo sea and a little fall in temperature so that all appeared at breakfast with pants and shirt except Drs. Frazier and Schmidt. At noon it was 72° and at dinner time but 64° and found us fully dressed. Dolphins and flying fish were with us all the middle of the day and the California seagull was on hand to welcome us. I wore a necktie at lunch and Dr. Schmidt said it was because I had sighted the city limits of Los Angeles and was preparing to land.

At noon we saw the south end of Lower California and I know

of nothing more barren and repellent to look at. Along this brown lumpy shore we traveled west to five o'clock when we found the bay of San Lucas, known to the early Spaniards as the Bay Aguada Segura or safe bay, at $22^{\circ}50'N.$, $110^{\circ}W.$ It is about two miles east of Cape San Lucas and presents a long, concave, deep sand beach between two rocky promontories, one to the east, and at the cape to the west three sugar loaves; through the center one of these is a small natural arch. All the high rough country in the background is barren.

This Bay of San Lucas was a favorite rendezvous for the English buccaneers when in wait for the early Spanish galleons from the Philippines to Acapulco.

Here Drake made his stand in 1579, and in 1587 Cavendish lay in wait for the galleon "Santa Ana" which he captured on November 4th of that year with his small boats, the "Desire" and the "Content." Here he took all he could ship of the loot of his prize and then burned her to the water's edge much to the consternation of her crew and passengers, who watched from the desolate shore. Satisfied of her destruction Cavendish sailed away to pursue his nefarious course while the brave resourceful Spaniards, aided by a hard rain, put out the fire and built up the sides of the bedraggled hull, and so far repaired her as to float her to Mazatlan across the bay, where much of her cargo was salvaged.

Shelvoke in 1721 here repaired his ships, discovered gold and found friendly Indians and many great fish.

In this year of our Lord 1934 we find a cannery, several warehouses and a small village of a few huts.

The evening was spent with pictures and music, reading and writing, and during the night I sneaked an extra blanket out of the linen closet (in which I was justified by finding the mercury at 58° at breakfast time). All wore sweaters and heat was turned on in the music room.

At 8 a.m. our hook was down in Santa Maria Bay, just north of Magdalena Bay at $24^{\circ}45'N.$, $112^{\circ}13'W.$ This also is a beautiful deep concave sand beach with a rocky promontory to the south and three sugar loaves to the north. The dredgers and shore collectors reported fine returns and Dr. Manter went fishing, bringing in enough to keep him busy all afternoon. The evening temperature was 60° and a little heat in the music room was comfortable. Captain made a wonderful Welsh rarebit for dinner.

On Thursday, March 8th, the anchor was up at 5:20 a.m. and we took compass course 331 to Balinas Bay at $26^{\circ}45'N.$, $113^{\circ}30'W.$ All day the temperature between 60° and 70° justified warm clothing. To the starboard ran a continuous strip of barrenness, brown rocky coast backed by lumpy brown foothills and tall brown mountains in the distance. Balinas is but one of a succession of long, narrow sand beaches and is a bay only by virtue of a submarine reef which makes

it unsafe except for the best of navigators. Even the highlands are very confusing for bearings. It is backed by barren hills which lack character or form. Everyone was inside, fully dressed and reading or writing.

Friday, the 9th, anchor up at 5:40 a.m. at Balinas Bay and we took a compass course along the barren coast of 130—260—and at 7 a.m. took 303 up the coast. 11:45 a.m. our hook was down in Thurlow Bay just across a sand bar from Turtle Bay, and to the south of it at 27°37', 114°50'W. It is a semi-circle of broad sand beach terminating in rocky bluffs with considerable kelp to the northwest.

Rather cold all day beginning at 8 a.m. with 68° and warming up but little. Most everyone went ashore for clams and returned with a couple of bushels that were rather large and tough, though of fine flavor and quite good in cocktails. I stayed on board because I had not been real warm for the past two days.

Our hook was up at two and we were off between the main land and Natividad Island, en route to Cerros Island where in South Bay we were anchored by 5:30 p.m. Cerros is 28°4'N., 115°20'W., about a third of a circle of steep cliffs with but one short sand beach and the most repellent land view it is possible to imagine. It would seem that some mammoth force had dropped a million loads of dirt, each the size of a large hill and that the elements had extracted an alkali to lend it a sort of sheen which in the distance simulates snow.

Cerros Island is really 21 miles long from north to south, and from two miles wide at the northern end to nine at the southern. It is entirely volcanic in origin and while barren in the south is quite fertile in the north. Here it carries considerable cedar forest at its summit, which reach an altitude of 3950 feet, and much smaller growth on its slopes. It supports some goats and rabbits and has been mined for gold.

After a quiet night two scientists went collecting and dredging, and Captain, Charley and I went fishing, but as the sea seemed full of barracudas and not much else we soon returned and the boys went out with hand lines and in a little while brought in about 200 pounds of these, the best eating fish on the coast and they were iced for our lunches to the finish of the trip. I have finished two books, "The Sea" and "Between the Tides," just to know what it is all about.

Sunday, March 11th, anchor up at Cerros and at 9:45 a.m. we were around Benito Island where we found a tanker aground and the sea covered with oil. She seemed to be headed straight for the light and piled up on the rocks so as to buckle her in the middle. The quarterdeck was awash and she had been partly stripped.

In the distance we were able to see with our glasses some sea elephants which are said to have come here to breed. A short time ago they were supposed to be confined to Guadeloupe Island. After a short inspection we took a compass course of 339 bound for San Diego. Land is just out of sight to the starboard and up the sea parallel to our course is a long streak of oil from the tanker and in it

kelp and debris, while to port the dolphins are jumping and with us are the gulls familiar to our home port. The temperature is sticking close to 64° but all seem to have become accustomed to it and some are about their packing without their coats.

Monday, March 12th, at 8 a.m. we slowly approached San Diego with only one engine and that at half speed, to reach quarantine at 10 o'clock. This we did and were soon o.k.d and passed up the bay to pier at 11 o'clock where many friends were waiting.

Si Perkins, the herpetologist of our previous trip, took out of the box the so-called bushmaster snakes which we had so feared and put them in a bag with his gloved hands. Much interest was shown in our menagerie by the San Diego people: Only those debarking at San Diego were passed by the customs, but we were allowed to go ashore and several of us visited the "Constitution" which was docked across from us.

If these few pages impart some slight impression of the joy, the romance, the adventure of such a trip, with such a Captain, such a mate and such a crew, or such a ship, and the moral stimulant of association with such men of science whose life work is the accumulation of certain proven knowledge for the use of mankind, they have served their purpose.