

1800 Australia
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Shades of Captain Cook, of Herman Melville, of Typee, Omoo, and Moby Dick; of Pierre Loti, Gaugin, Robert Louis Stevenson, Jack London, James Norman Hall, and Charles Darwin and the "Beagle"; all these names ~~names~~, and many more, seemed to come alive when Mr. Bredin proposed our going to the French Society Islands - - Tahiti, Moorea, Raiatea, Huahine, Bora Bora -- those romantic ~~and in reach~~ Isles of Paradise in the far blue yonder of the South Pacific. All hold something beyond dreams and wishful thinking for the explorer, the scientist, ^{the} writer, poet, artist, or adventurer.

Although we left Washington and the Museum quietly and without fanfare, this Smithsonian expedition really went off with a "bang"! No sooner had Dr. Thomas E. Bowman, the expedition's copepodologist, and I foregathered for luncheon at his parent's home in San Francisco on that March 22nd-- the day before the departure of the "Mariposa" for the South Seas-- than the city "threw" the second most severe quake in the city's recorded seismic history. This tremor registered 5.5 on the Richter scale as compared with 8.25 for the catastrophic quake of April, 1906, just fifty-one years before, almost to the month.

live
The senior Bowmans on the sunny side of Market Street where
^
this well-known thoroughfare passes along the southern slope of

Twin Peaks, 480 feet above sea level. Perched on this steep slope, a good ~~three~~ ^{down hill} stories above the next street, the house commands a magnificent view of San Francisco Bay.

Tom and I were seated before that windowed panorama when the bang went off. A mighty jolt accompanied by a deep-seated, guttural rumble shook the house to its very foundations, just as if a terrific blast in a quarry close by had set off a thundering avalanche of rock. With the sudden realization that a dwelling on the brink of that precipitous ^{hillside} ~~might~~ be hazardous, I did not ^{long} ~~hesitate to join~~ ^{before joining} the more earthquake-wise members of the party ^{who} ~~in~~ ^{ready had} the rush for the door and ~~the~~ ^{an} open street.

It may be reassuring to learn that a frame house is one of the safest places in a quake, yet it is not difficult, even at this late date, to scare up more than a little concern thinking of what might have happened had the house been nearer the epicenter of that ~~precipitous~~ quake and toppled over the cliff.

Two days later, in Los Angeles, Drs. Rehder and Cutress came aboard the "Mariposa", completing our expeditionary party of four - marine biologists all, Each ^{had} ~~with~~ his special interests to pursue: ^{Tom} ~~Dr.~~ Bowman (already mentioned), the smaller Crustacea, chiefly the Amphipoda and Copepoda; Charles E. Cutress, the "radiate" animals comprising the Echinodermata - starfishes, sea-cucumbers and their relatives - and the Coelenterata, which include the jellyfish, sea anemones, and the fleshy and stony corals; Harald A. Rehder, the Mollusca - sea shells, land shells, snails, squids, and octopuses; and the author, the larger Crustacea - shrimps, crabs,

and lobsters.

While docked in Los Angeles Harbor during the daylight hours, a visit was paid to mutual friends at the Allan Hancock Foundation of the University of Southern California, and to Captain Hancock's "Velero IV", now the floating marine laboratory of the University of Southern California. ^{This motor vessel is} ~~of Southern California~~ especially designed and equipped for physical and biological oceanographic investigations.

In Honolulu, four and a half days, and 2,228 miles later, we were welcomed by several friends of long standing - Mrs. Arthur de C. Sowerby, whose late husband was the principal contributor to the National Museum's superlative representation of the larger animals of North China and Manchuria, and Mr. Ernest N. May of Wilmington, Delaware, who with Mrs. May entertained us that evening in their beautiful home on the sea under Diamond Head. Mr. May is a brother-in-law of Mr. J. Bruce Bredin, who, with Mrs. Bredin, made possible this third of the expeditions bearing their name which they have sponsored for the Smithsonian Institution. The first was to the Belgian Congo in 1955, the second to the Caribbean in 1956 (see the Smithsonian Institution Annual Report for 1956; Publication 4285, 1957). Earlier in the day the biological laboratories of the University of Hawaii, the Bishop Museum, the headquarters of the Pacific-Oceanic Fishery Investigations, and the ~~xxxx~~ Aquarium were visited.

Indulgence here is asked of our many friends and colleagues in California and Honolulu for the absence of further acknowledge-

ments of their many kindnesses.

After five days and 2,381 miles more, we awoke to find ourselves steaming into Papeete harbor, just as the morning sun was beginning to pink-tint the clouds ~~back-dropping~~ the still dark, verdant, sculptured hills of Tahiti. From that entrancingly beautiful sunrise our attention was almost immediately diverted by a flotilla of outrigger canoes swiftly being paddled out from shore by a host of colorfully costumed Polynesian maidens.

Not for long did their hanging fragrant frangipani ^{leis} ~~leis~~ (the Tahitian equivalent of the Hawaiian lei) around our necks with a kiss on each cheek keep us from scanning the shore. Somewhere among the many yachts from all over the world, moored along the sea wall, was the 56-foot white-masted sloop - our home-to-be that was to transport us about the islands for the next seven weeks.

We found the "Mareva" most seaworthy ^{and} comfortable, ~~well~~ commodious above deck, and well-equipped below ~~in all particulars~~ with refrigerator, large ice chest, auxiliary diesel engine, and electric generator. She was most generously made available to us by her owner, Mr. James McConnaughy, of the Kettering-Oakwood Times of Dayton, Ohio. Here it may be added that, having made several cruises through the islands and having become fascinated with the people and their history, Mrs. McConnaughy authored several fictionalized accounts of the yesteryears of the Polynesian way of life and love, as well as of ^{the} contemporary ^{scene.} ~~life in Tahiti~~ *

 * "Point Venus", "Tropic of Doubt", and "Here on this Island".

check
in dict.

For this exemplary state of affairs we were indebted to

Things had been so well kept aboard the "Mareva" ~~by~~ Nautu, a beaming Tuamotuan, stout of heart and frame--barrel-chested is the word--deck hand, engineer, look-out, ~~and~~ helmsman on occasion, fisherman, and expert diver, that we were able to move aboard the vessel immediately on our arrival. Other members of the crew - captain and cook - were ours to provide.

Captain Temarii Teai was a real ~~discovery~~ ^{find}. One would have to search long ~~for~~ ^{and as an} his equal as navigator, ever-helpful and pleasant shipmate, and gentleman. Recently retired skipper of the colonial government's official inter-island ~~schooner~~ ^{patrol}, he knew intimately all the islands, reefs and passes, ^{as well as the} winds and weather in this part of the world. Educated in France, he was equally at home with French, English, and his native Polynesian tongue, and, having friends and acquaintances throughout the archipelago, he was able to facilitate our efforts everywhere. The captain also became an expert at fine-sorting our catches. Quite a number of vials of small organisms brought back to the museum attest ~~to~~ his keen eyes and knowledgeable industry.

In view of the compactness of the vessel, the well-appointed galley, its appurtenances, and stowage space, we decided to dispense with the services of ~~the~~ ^a cook, and to divide the housekeeping chores among us. Tom had done a stint with an army cook's detachment during the last war, and Cutress was a good second, also proving to be a wonderful purchasing agent. Upon Rehder and myself devolved the duties of mess boy. As cooks and helpers we four prepared most of

the meals aboard, but the Captain and Tautu handsomely reciprocated time and time again. The Captain ~~proved to be~~^{was} an excellent chef, in addition to his other qualifications. Many were the times that we came in, wet, bedraggled and tired, from working on the reefs, dredging, or seining, to find a well-prepared and appetizing lunch or evening meal awaiting us.

Visiting the market with Cutress at half past five in the morning, when it opened, was a rewarding experience. There were fresh fish of all kinds in great abundance, often more valuable to us as specimens than as provender, although we enjoyed many of them anyway. A profusion of vegetables, both tropical and temperate-zone varieties, and ripe fruits of all sorts were displayed for sale, and there was always a plentiful supply of that wonderful French bread at five francs a loaf, the legally established price throughout the islands -- as crisp, fresh, and as fragrant as any you ever bought in France. Walking thus between the rows of tables and stalls filled with all kinds of exotic foods, jostled by a noisy crowd of bargaining and gossiping people of the many races and mixtures that make up the populace of Papeete, and breathing in the intriguing odors arising from the fruits and vegetables and fresh bread, mingled with the fragrance of the ever-present flowers worn either in the hair or hat or around the neck of women as well as men, (all made) this an ever-fascinating occasion. By seven-thirty the market was generally sold out and closed down.

In Papeete we had the good fortune of meeting up with Jack Randall, here with his wife and small daughter aboard his 36-foot ketch, the "Nani". He and Charles Cutress had been classmates at the University of Hawaii; now he was engaged in studying the fishes of French Polynesia and collecting specimens for the Vanderbilt Foundation at Stanford University. Learning of our venture he ~~and his family were on hand at the dock to greet us on our arrival, and~~ encouraged us to visit the great atoll of Tikahau in the Tuamotus.

With Jack aboard we hopefully set sail on April 8, four days after our landing in Papeete. With a favorable wind to begin with, and a purring diesel engine, the "Mareva" was making good time when the engine unexpectedly went "hot"; The flexible line between oil pump and clutch had burst. The Captain and Tautu tried mending it with tape, but to no avail. There was nothing left but to turn back for repairs. With sails alone progress was so slow that when we were about four miles off Papeete, the Captain sent Dr. Rehder and Tautu ahead in the outboard-motor-powered dinghy to arrange with the Captain of the Port for a tow to our mooring place. The necessary repairs having been accomplished during the following day, we got underway again by the mid-afternoon of the tenth of April, ~~and covered~~ ^{were covered} The approximately 140 miles to Tikahau in a little over 24 hours.

This is the stretch of sea, in part at least, through which Darwin sailed on the "Beagle" ^{on} November 13, 1835. In his diary notes for that day he called the Tuamotus the "Lagoon Islands", which ~~they~~ as characteristic atolls, they truly are.

Atolls lie low in the water and are not much higher than the wave-swept reef enclosing their central lagoon. At irregular intervals

along and within the crest of the reef accumulations of coral blocks, fragments, and sand, tossed up by the waves that unceasingly batter the reef, become consolidated ~~in time~~ to form ~~picturesque~~ palm-decked islets, the larger of which are often inhabited. ~~Frequently we find~~ ^{Through} one or more channels, ^{usually} breaching the ^{se} reefs, ~~through which~~ pours the run-off of the water that is piled up in the lagoon either ~~from~~ ^{by} the tides and wind-blown spray, or by the breakers that run across the exposed reef ~~on~~ ^{the} windward side of the

Atolls, because of their low elevation and poor visibility, have always been a menace to navigation in the South Pacific, especially in the days of sailing ships, which were rather helpless when exposed to adverse winds and currents in close quarters, ~~situations~~. Thus it is quite understandable that the numerous ~~atolls~~ atolls comprising the Tuamotus, ~~were~~ ^{are} designated ~~as~~ the Dangerous Archipelago on many charts, and in ^{the} nearly sailing directions.

On the other hand, The Society Islands, are "high islands". Each ^{is} essentially a volcanic cone or ^{connected} cones surrounded by ^a fringing reefs within which ~~are~~ enclosed relatively narrow lagoons with passes giving access to the sea. These ~~are~~ ^{high islands are welcome} aids to navigation ^{or} ^{are} can readily be located. They are recognizable at sea for great distances, even when below the horizon, for almost always over their peaks hangs a cap or cover of clouds indicative of the existence of an island even when this itself is not visible.

The trip

Strong winds and squalls attended ~~this voyage~~ to Tikahau and no doubt hastened our progress. The atoll was sighted shortly after noon, but another two hours elapsed while we skirted the reef, before we entered Tuheiava Pass on the western side of the atoll. Once within the ^{central} lagoon we turned south and headed for the anchorage marked on our chart as lying on the lagoon side of Matiti islet, one of ~~the~~ several ^{the reef of} studding this atoll. Just within the entrance we spied an intriguing patch of coral, a micro-atoll Jack called it -- an atoll within ~~an~~ an atoll. We had come a long way to sample the fauna of a South Pacific coral reef, and were not to be ~~thwarted~~ ^{gainsaid/deterred} by the relative lateness of the hour. No sooner was the anchor down than all hands piled into the dinghy with their collecting gear to have a go at it. So rich was our haul of marine life of all kinds that we spent also the next day, forenoon and afternoon, collecting along the lagoon and seaward shores of Matiti islet and its outer reef. The effort ~~netted~~ ^{yielded} ~~us~~ more than 300 crustaceans - shrimps, crabs, hermit crabs, and a stomatopod or two, several hundred mollusks, more than 20 worms of several species, a few echinoderms, holothurians, and brittle stars, and a number of small fish that had taken refuge in interstices ^{of} ~~and holes in~~ the coral ~~mass~~ growth.

Though wanting to try our luck at fish poisoning, we hesitated putting out rotenone because the South Pacific islanders ~~are~~ ^{are} great ~~fishermen~~ ^{fishermen} securely ~~get~~ ^{get} much of their food, and in many cases earning ~~the~~ their living, by fishing. To settle the question, Captain Temarii sent Tautu ashore to sound out the chief of the village ~~where~~ near the pass.

Before long Tautu returned, accompanied by Chief Teroro, whose daughter and her cousin served as capable engineer and crew of his outboard-powered whaleboat. He had heard of our being in the islands, as he ~~was up~~ ^{tunes in} on all current news broadcast by "Radio Tahiti" in Papeete, ~~which he heard over~~ ^{his receiver} ~~his receiver~~ ^{was} powered by the windmill ~~which was~~ visible over the palm trees of the village. Happily he assured us that their catches were of the more migratory species, and that our operations on the reef ~~near our anchorage~~ would occasion no harm. We thanked him for his advice and permission ^{to poison} the patch of coral shielding our anchorage south of the pass. A gift of several packs of cigarettes which had been especially brought along as good will give-aways the chief politely declined, explaining that he was a Seventh Day Adventist, and so ~~did not~~ ^{adverse to the} use ^{of} tobacco. He was ~~pl~~ pleased, however, to accept three grapefruit, a bag of mint candies, and a couple of milk chocolate bars for the girls. A few days later he returned the compliment with several delicious watermelons. Ever since the first Europeans came to the South Pacific missionaries have been proselyting the natives. Today virtually all Christian denominations have missionaries at work in the Society Islands. The Seventh Day Adventists and the Mormons, though fairly late comers, are especially active.

Too late to start ^{the} poisoning after Teroro's departure, we essayed ~~dr~~edging in five fathoms in the lagoon off the main village. Both dredges, one after the other, would have been a total loss had it not been for Jack Randall, who went over ~~the side~~ with his

aqualung ^{do} ~~and~~ dislodged them from beneath coral heads under which they had become wedged. After these dredging ^{at} attempts, the Captain moved the "Mareva" across the 8-mile wide lagoon to another islet, Maiai, where we had lunch ~~after anchoring at some distance~~ off the sandy lagoon shore.

That afternoon the dinghy landed us on the lagoon beach, and ~~after~~ crossing the narrow islet, ~~fairly~~ densely covered with coconut palms and other trees and shrubs, we found ourselves on the windward side of the reef that is Tikahau. Against its outer face great rollers from across the wide Pacific roared unceasingly as they broke against the reef and threw skyward great sheets of water and wind-blown spray. At low tide it is possible to work over the "flat" of the reef and in the gulleys dissecting it. Through these the water rages with each surge of the sea. Occasionally the crest of the proverbial fifth or seventh roller (for safety's sake make sure of your count) boils across the top of the reef. Woe betide the unwary if not braced in time to meet this wave, for he may be forcibly thrown down and, as has sometimes happened, have his clothes ripped off by being "washed" over the rough surface of the reef. Under and among the lumps and boulders of coral that the sea has tossed on the top of the reef, and in the interstices of the coral lining the gullies, were found a treasure trove of little fish, sea shells, and other ~~many~~ invertebrates.

~~After~~ ^{was} An idyllic night spent on the "Mareva", ^{under the soft mellow light of} ~~with~~ the tropical moon shining ^{down} over the palms of Maiiai ^{upon} ~~down on~~ our little vessel ^{gently} rocking

~~gently~~ rocking

gently in the lagoon ^{quiet waters.} Some of us returned the next morning again to the outer reef, ~~for more collecting~~; others made several seine and dredge hauls on the lagoon side of the islet before ~~we all~~ ^a returned ^{was made} to the old anchorage in mid-afternoon. ^{Matiti}

That night traps were set out ~~on Matiti islet~~ in the hope of getting ~~them~~ rats for Dr. David Johnson, the National Museum's mammalogist, who is especially interested in their distribution over the world. The claws ^{later found in} ~~from~~ the traps ~~had been later examination~~ indicated only too well that the land crabs ^{had been} ~~were~~ more fore-handed than the rodents. ^{By} Before returning to the "Mareva" in the dinghy ~~after setting the traps~~, Tautu, Dr. Rehder, and I ranged the outer reef with flashlights. Tautu made the best haul, a small robber or coconut crab, ^ulyrking along the lagoon shore. It was the first of several we brought back to the Museum, and the first I had ever seen captured alive.

We did not get at our fish poisoning until the following morning. ^{It} ~~The poisoning~~ was more successful than anticipated, and resulted in the largest and most varied fish collection made at any one station in the course of the expedition. Our derris root, or rotenone, as the powdered form is known, moistened with sea water was pressed into compact cakes. These were placed in suitable pockets in the reef before breakfast, and given about an hour's ~~to~~ "soak". In that time the slowly diffusing poisonous extract of the derris root had paralyzed the respiratory apparatus of all fish coming within range of its lethal concentration. These were for

the most part found lying on the bottom, and among the coral formations, ^{A few} ~~with some~~ floated ^{ed} on the surface, ^{Going} ~~when we went~~ out after breakfast ~~with the last~~ with water glasses, face masks, dip nets, and spears; several hundred fishes were picked up in the next two hours. ~~The~~ The 110 saved for specimens had to be injected, labelled, wrapped in cheese cloth, and bedded down in our copper tanks before taking off ^{for Makatea} ^{at 10 p.m.} There was some urgency to our homeward voyage; the refrigerator had gone out of whack, the cabin "head" refused to function, and after being out for over a week water and fuel needed replenishing. It ^{proved to be} ~~was~~ another of our boisterous passages -- squalls in the early morning hours, between 3 and 5 a.m. -- but a relatively ^{brief} ~~short~~ one, as we reached Makatea, also known as Aurora Island, at quarter to six. Because of our need to return to Papeete as soon as possible, we ~~could~~ spend ^{scarcely} ~~no more than~~ 8 or 9 hours here, and busy ones they were.

Makatea, the name given this type of island by the Polynesians, has been adopted as the generic name for raised atolls, of which this particular ^{" "} Makatea is an outstanding example. Its towering cliffs were the seaward face of the reef that ^{formed} ~~was~~ the original atoll, but which ^{since} ~~now has been~~ elevated to a height of 350 feet above the level of the sea. The somewhat ^{depressed} ^(centrally) plateau was the ^{former} lagoon floor, ^{which now is a} ~~now the place of~~ rich deposits of phosphatic limestone. At the present time this ~~phosphate~~ ^{being} is actively mined, ~~with~~ ^{are} two hundred thousand metric tons and more ^{are} exported every year. ~~There is~~ A narrow, ^{steep} path ⁱⁿ ~~is~~ one of the clefts in the islands rocky wall, leading ^{ward} ~~up~~ from the ~~wharf~~ landing docks at Temao, the

^{one} the settlement on ~~this~~ ^{the westerly} side of the island. To bring down the narrow-gauge cars loaded with the phosphate rock an ~~escalator or~~ inclined railway, with two platforms, counter balancing one another in ascent and descent, had to be installed. To facilitate loading the freighters lying offshore because of close-in reefs, these cars ~~for dumping~~ are run out on an impressive, ~~arched~~ cantilever ^{ed} steel structure extending ^{well} out to sea beyond the new fringing reef ^{that is} growing up about the island.

Some of us spent a few hours in the morning obtaining a representation of the marine life to be found on this relatively narrow, shelf-like reef. Later ^{we} all ~~of us~~ rode up to the top of the island on the inclined railway. This island is said to have been a burial place for Polynesian chiefs years ago. Their remains are supposed to be hidden in the numerous caves honeycombing the cliffs. Human bones have been uncovered also in the course of the mining operations. To obtain some of these was one of the reasons for stopping here. That we were fortunate in our quest was due to the personal interest of the resident physician, Dr. Francel Roques. He told us that as long as a team of French anthropologists had been here a few years ago, we might have some of the skeletal material they had left behind. We picked out a few of the better preserved long bones and a skull, the more complete of several partially fractured ones. Naturally we regretted that there was no opportunity to explore the reputed burial caves. Dr. Roques ^{himself} is quite an authority on beetles, and has with him ^{personal} his considerable collection, the result of fifteen years of collecting, in large part during his previous tour of duty in North Africa.

Housing facilities on the island are modern and comfortable, as are also ~~the~~ ^{quarters.} the hospital. Dr. Roques, whose family-- wife and daughter-- are with him, expressed a wish to exchange Coleoptera, ~~and gave~~ ^{He asked us to take} several of his aqualung tanks ~~back~~ ^{so that,} to Papeete for recharging ~~so that~~ they could be returned to him on the very next phosphate freighter. At four-thirty we left ~~Makatea~~, carrying with us the mail from the island, and after a seventeen-hour run, marked by a good following breeze and occasional squalls, we entered Taunoa Pass, the ~~next~~ ^{first} entrance to the lagoon eastward of the Papeete Pass. By 10 o'clock in the morning, April 17, the "Mareva" was again snugly berthed at her accustomed place along the Papeete sea wall, the Quai Bir Hackeim, with mail and repairs the first order of the day.

The next day the first purchase was a steel drum, into which the fish we had gathered on Tikahau were transferred, ~~for our~~ ^{as we needed} ~~our~~ copper collecting tanks ~~had to be emptied~~ for the next round of field work ~~that was to take~~ ^{place} in Bora Bora, Huahine, and Raiatea. On the 19th, the opportunity was taken to examine the reef near ^{Papeete} the harbor entrance. This netted ^{US} another interesting lot of fish, that were promptly injected and consigned to the recently purchased drum.

Late that same evening Mr. James Copperthwaite, with whom we had become acquainted before going to Tikahau, and who had evinced a great interest in our activities, and later ^{also} in the skeletal material ~~we had obtained on Makatea~~ ^{from Makatea}, dropped by to tell ~~us~~ of the discovery of a skull in a flower bed across the road

from the Cornelius Crane estate - Mr. Copperthwaite was Mr. Crane's representative in Tahiti. The skull had been unearthed by a native gardner who quickly covered it over again--among ~~the~~ Polynesians burial sites are tabu, and not to be disturbed. But ^{for us} the temptation was too great. The next morning I hurried out with spade, sieve, and carton, and found, not one skull but ^{both} two, rather badly fractured by the man's spade. Carefully sieving the soil, practically all the fragments were recovered, but surprisingly enough no other bones were present. The interment happened to be on the property of Mr. Medford Kellum, residing on Moorea. I wrote him at once, ~~and~~ his letter granting me permission to take the find back to the Smithsonian Institution included an invitation to visit him, should we come to collect in Moorea. ~~The~~ ^{The} letter contained the reassuring words: "It is certainly better that a museum have those fragments than to rebury them in the sands of Paea. I feel certain that no living natives had any idea that there were bones buried at that place.. It should therefore not cause any ill-feelings among the natives if the fragments are removed."

The day we departed for Bora Bora was Easter Sunday, April 22, and Jack Randall, Dr. Rehder, and I took the opportunity of again visiting the early Sunday market. We arrived there shortly after five o'clock, and the guard, who knew Jack, let us in ^{through} the iron gate. This time we were after unusual fish for our collections, and we were able to examine the catches brought in by fishermen and displayed for sale at comparative leisure, undisturbed by

crowds of shoppers. We discovered a number of interesting specimens, and finished our purchases just as the gong rang at 5:30, the signal for the gates to open, permitting the entrance of the hordes of people waiting to make their purchases. Back to the ship we went through the crowds of shoppers, carrying "home" our fish native style by ~~fibre~~ means of ^a fibre ^{fish} looped through gill opening and mouth.

Later the Captain came down to the ship with his wife, daughter, and two grandsons, to show them over the ship. To mark the occasion of Easter Sunday they brought with them a native-style luncheon, prepared at home. This exceptionally delicious Polynesian repast included raw fish pickled in lime juice and served with a sauce of coconut milk, a "mess" of large Turbos, a hard-shelled coiled sea snail, and an equally toothsome shellfish, Vermetus, which live in more or less twisted calcareous tubes resembling those of certain polychaetous marine annelids - each of these large South Pacific Vermetuses yields ²⁰⁰ a most tasty morsel of mollusk meat, as large around and as long as or longer than one's forefingers. The vegetables were breadfruit, "cook" bananas (plantains), sweet potatoes, a dish of shredded fresh coconut to sprinkle over everything, as the Italians do grated cheese. A sweet rice pudding was the dessert. Raw fish may strike some people as an unsavory dish, but it is no more so than pickled herring - raw fish "laid down" in vinegar and spices instead of lime juice - the only noticeable difference being in coconut milk which the Polynesians lace with seawater before pouring it over.

Outbound we headed for Taapuna Pass in order to investigate an area of very luxuriant marine growth seaward of the home occupied by Mrs. Stephen Phillips of Salem, Massachusetts, her three young daughters, and, of all people, Margaret Titcomb, librarian of the Bishop Museum, known to every scientist of whatever calling who ~~has~~^{ever} visited Honolulu. She had come down on the "Mariposa" with the Phillipses, whose good friend she was. Mr. Phillips was to join his family later, and, being close friends of the McConnaugheys, they were to take over the "Mareva" for a cruise to the Marquesas when we were through with her.

The section of the reef ~~that~~^{to which} Mrs. Phillips ~~wanted us to see~~^{called our attention} was literally carpeted with hundreds of large sea anemones, ~~about~~^{many a full} six inches across when fully expanded. Intermixed were a host of other sessile ~~coelenterates~~^{forms}; hydroids, seafans, and fleshy corals. A great variety of shells were either sitting on ~~or moving over~~^{here and there} the coral sand and rock bottom. Colorful fish were flitting ~~about~~^{about}, ~~here and there~~^{and} ~~about~~^{there were} undoubtedly many more crustaceans ~~than the~~^{present} few crabs and shrimps we were able to spot. With great reluctance we left this happy hunting ground, but we had ~~to be~~^{to be} on our way.

The sea always seemed to get rougher ~~as~~^{downward} evening ~~approached~~^{approached} ~~to remain so~~^{to remain so} and on through the night. ~~At~~^{About} ~~5:30~~^{his afternoon} the "Mareva" began rolling heavily and our tank chests started straining at their lashings. Before we could do anything about it, an eight-gallon tank full of our reserve formalin, that had somehow failed to be lashed to ~~the~~^{the} others, was ~~over~~^{And worse yet,} on its side. ~~In addition~~^{In addition} the lid had not been fastened securely ~~and~~^{and} In an instant some gallons of that

noxious fluid were sloshing back and forth over the deck. Cutress, who happened to be nearest, quickly righted that tank, and so saved some of ~~our~~ ^{that now} precious preserving fluid.

If ever you want a bit of excitement on a small craft at sea, just turn loose some six or seven gallons of commercial formalin while ~~your vessel~~ ^{it} is rolling in a heavy sea. If you know what full strength formalin can do to your skin and the mucous membranes of your respiratory passages you will know what we were up against in that formalin-saturated atmosphere. It was no fun getting up the water to flush the formalin overboard with just one small bucket on a rope. Every exertion made you breathe deeper and inhale more of those atrocious fumes, while a formalin-seawater flood was sloshing over your feet. Sure, we had to spell one another on the bucket; one can take only so much of those choking vapors!. No one of us would ever again want to live through another experience such as that one. Fortunately, we had still ~~quite~~ a number of 1-lb bottles of the "stuff". Never again will I put so many of our "eggs" in one basket~~s~~, or tank, again, - not on a trip such a long way from base.

Clearing the N.E. point of Moorea at about 6 p.m., we sighted Huahine ~~at the next morning~~ ^{just 12 hours later}, about 10 miles off the starboard bow. By 9 ~~we were entering~~ ^{o'clock in the morning} Teavapiti Pass, ~~to that beautiful,~~ ^{the} ~~the eastern entrance~~ wonderfully peaceful channel that separates Raiatea from its twin Tahaa. By 11 we were leaving Urepiti Pass at the other end, headed for Bora Bora.

The surf piling high against the seaward face of the fringing reef of Bora Bora was a stirring sight. Whoosh, crash, and a sheet

sheet

of spray would go up 10 to 12 feet in the air. The sky was overcast, the weather thick and somewhat chilly, or so it felt. One wished for clearer weather and some sunlight in order to get a good photograph of that skyward leap of the sea. We coasted along the southwest edge of the reef for some time before making Teavanui Pass on the island's western front.

It was a relief to get into the calmer waters of the lagoon. Even ~~though~~^{so} we were reluctant to leave behind the spectacular sight outside. We did not stop at Vaitape, the principal settlement, to deliver the sack of mail that the postal authorities in Papeete had asked us to bring over to Bora Bora -- just drew close enough ~~to the pier~~ to toss it ~~ashore~~^{onto the pier.}

more secluded

It was our intention to seek a ~~landing more out of the way,~~^{the} less subject to [^]distractions occasioned by too many, or too frequent visitors. From what Captain Temarii had told us, adjacent Faanui Bay held promise of being ~~the ideal~~^{such a} place. Left over from World War II's operations was the ~~stout~~^{yet} but deteriorating Farepiti Point dock or wharf, which, together with the water line serving it had been installed by the Navy, when the island was an important half-way base between Honolulu and Australia and New Zealand; with the cessation of hostilities the installations were abandoned. It goes without saying that the villagers at the island's principal port, site of the ~~the~~^{only} cinema palace on Bora Bora, were disappointed by our choice of operating base, but never was the old saw of "jumping from the frying pan into the fire" more truthfully applicable to any situation than into the one we had unwittingly maneuvered

ourselves. Tane, brother of a taxi driver we had employed in Papeete, drove a bus here on Bora Bora. He happened to come by, perhaps purposefully, with some passengers on the more or less passable road that ran around most of the island. From a village back in the woods, the proximity of which no one had realized, came folks, young, middling, and old, to have a look at the "Mareva" and the visitors from overseas.. We were given a cordial invitation to attend a practice dance that very same evening in that neighboring village. If you know Tahiti better than we did at the time you would know that an annual dance festival and contest is held in Papeete each year during the Bastille Day -- July 14th -- festivities. We learned of that custom here in Faanui Bay on April 22, 1957. Each of the Society Islands sends a team, in fact two teams, one of men and one of women, to that annual event. Prizes are awarded to the best dance teams, and the best-costumed teams ^{male and female.} There are prizes also for other contests of skill and prowess. Bastille Day in Tahiti has ^{changed} ~~become~~ now-a-days, from an all-day and all-night celebration, ^{to} a colorful, exciting, and exhausting affair lasting a ^{full} ~~few~~ week and ^{often} ~~even~~ longer.

The Bora Bora girls had won top team honors for women several years in succession. How could we refuse to accept an invitation to a part of the training program in a village that might contribute one or more members to future Bora Bora prize-winning teams?

At half past eight we went with our Coleman lantern to light the way on the pitch dark road. The dance was held on the concrete floor of a former Navy storage shed of which the corrugated iron superstructure had either rusted away or "walked off" in the years

since the war. It was located some distance from the wharf, perhaps to conceal it from enemy bombers that fortunately never materialized.

The ballet master, or director of dance, had his charges at work by the time we arrived. The orchestra was going full tilt, and long before we could see what was going on, the stirring beat of Tahitian drums greeted our ears, and, we must confess, quickened our step. All was in semi-darkness, as only two single-mantle Coleman lanterns were on hand to light up the place. Ours, with two mantles, proved a welcome addition to the dance floor's otherwise feeble illumination.

The performance was interesting and colorful to the extent of tempting Cutress to try a few flash-light color shots. After the second or third, the instructor begged him to desist, saying that after a ^a flash went off he was so blinded for a time that he could not see what the aspirants for places on the island's ladies team were doing. A compromise was effected; we wanted pictures of the girls in their colorful dresses, and so were promised that some of them in full costume would come down to ~~the~~ ^{our} wharf ~~during~~ the following ~~day~~ ^{morning.} The candidates for the Bora Bora men's team followed the ladies onto the dance floor, but not for long. The rain, which started a little before ten o'clock, threatening t^o become a real downpour, put an end to the evening's tryouts.

We got no action pictures that next morning for want of an orchestra, but we did get a few stills. The girls prolonged their

visit beyond all expectations. They stayed on and on that morning, and as noontime rolled around were on hand for lunch. This might have posed a problem - there were six girls - but for the fact that the day before the local fisherman had been asked to bring in some spiny lobsters for specimens with such other crabs and shrimps they might secure. Early this ^{very} morning some four or five fishermen in two outrigger canoes brought me a total of 49 lobsters and, in addition, 2 Scyllas -- a genus of large swimming crabs widely distributed in the Indo-Pacific -- and a dozen huge stomatopods, all 14-16 inches in length. I was aghast at this bountiful harvest, far larger than the half-dozen or so I had expected to get. Good-will, however, is good-will, especially in a ^rstange place; besides, spiny lobsters are delicious eating. So we had s^upecimens as well as an abundance of fine sea food for a number of meals to come. The lobsters, cooked and refrigerated, were ready to eat; with cooked rice and lots of butter -- the Polynesians surely love butter, limeade, and canned plums for dessert, a real banquet was had. With true domesticity, the girls carried the dishes to the tap on the water-supply line a short distance from the dock, and washed them there, while Dr. Bowman scouted around for amphipods in the swampy area into which the water drained. This was kept continually wet by overflow and wastage, as home owners living in the area came here for their fresh water. I called it "the spring", for as such the intermittently used water tap functioned.

With the drying and the stowing away of the dishes in their proper "pigeon holes" on the galley shelves ended, we were ready

to call an end to the party. There was shore collecting still to be done, but three of the girls insisted on helping out with this "chore", ^{Too} as did one of the many boys who were forever hanging around the dock. These volunteers turned out to be of substantial assistance in capturing animals on, under, and from cracked coral rock, or shaken from clumps of seaweed in the stretch of shore between Farepiti and Pahua Points and out to the inner slope of the fringing reef. Among the specimens the girls secured was the second of our only three examples of prettily marked shrimp of the genus Gnathophyllum.

Once more, as before and since that "picnic", I congratulated myself on the wonderful cap~~ta~~in we had engaged. It was not too long after we returned from this collecting foray that the Captain, a ^{fa} family man himsel^{ef}, and a person of great tact, took over. In French, the language in which all Society Island youngsters are schooled, he said "Girls, it's time to go home". With "Good-bye - Au revoir" they were on their way.

Bowman's amphipods, and the crustaceans, shells, echinoderms, hydroids, bryozoa, and sponges from along the shore and the east and south sides of Farepiti Point were not the only specimens we got, or the only collecting stations we established on Bora Bora. There were some 19 stations at which we collected on this island, but in Dr. Rehder's and my estimation the station "occupied" on the Bora Bora reef three days after the "picnic" was the most memorable.

The morning following that impromptu luncheon was ushered in with lusty rain squalls, proverbial tropical torrents of cold water. Who should come paddling by in a native outrigger canoe, suntanned-brown and naked except for a pair of well-worn ~~khaki~~ ^{khaki} shorts, but Henry Strauss of New York City, looking more native than a Bora Boran. He was doing a documentary film on the "Islands under the Wind", as the French call the windward members of the Society Islands, for Pan American Airways. He had been at the practice dance of a few nights ago, and had come to pay us a visit this chilly morning. No more entrancingly beautiful motion picture has ever come out of these Isles of Paradise than the one Mr. Strauss - fellow member of the Explorers Club, by the way - put together from his filming.

The clearing afternoon brought the girls back, this time to deliver several hula costumes we had ordered. That transaction disposed of, we overhauled our past several days' collections, changed alcohol, and cleaned up an accumulation of ~~Pen~~ ^{Pen} Shells, bottling the little pontomid shrimp that live, a pair each, in most members of this family, especially where these occur in crowded beds. The "meat" of these Pen Shells = of the genus Atrina, which, by the way, we had purchased that morning from a fisherman, ~~we had~~ ^{formed} ~~our~~ ^{it} supper that night, and a delicious repast ~~they~~ ^{it} proved to be.

The next day was more or less routine: did some dredging in the morning along the north side of Faanui Bay, had the balance of our spiny lobsters for lunch, worked on the reef west of Toopua Island, had Squillas, or Mantis Shrimps (the stomatopods), for

supper, and at night hung the waterproofed electric light over the side. The wealth of small animal life such a light attracts is unbelievable; larvae of all kinds, fish, worms, crabs, shrimp, mollusks, and other forms of marine life come swarming in such numbers as to constitute what has aptly been called plankton soup. Through this "soup" may dart lightning-swift squids or at ~~the~~ times scores of fish of sizes varying according to their preferred foods - whether small planktonic organisms or fishes smaller than themselves. ~~Under favorable conditions~~ ^{More often than not} quarts of these diverse kinds of marine life can be had by merely swishing a dip net through the water.

~~By~~ ^{Coming} back to that stomatopod supper: the ^{tail} meat of ~~the~~ ~~tail~~, as in the case of spiny lobsters, is what you primarily eat. Cooked the same way, the tail of Squilla is about the most tooth-some piece of crustacean meat you ever set your ^{teeth} to. Strange as it may seem, the flavor is very sweet. To associate "very sweet" with lobster or crustacean flesh may ~~strike many as~~ ^{sound} incongruous, but the fact in no way lessens the pleasure of eating Squilla tails.

Speaking of delectable crustacean food, on another occasion we enjoyed for the first time, robber or coconut crab! Having read that on some South Pacific islands this crab has been exterminated by natives hunting it for food, and that it is getting scarcer in its haunts elsewhere, I wanted, as a carcinologist, to sample it before ~~it was~~ ^{there were} no more. ~~Though~~ ^{to be had.} Reluctant to be another hungry enemy of this unique crab, the wish to taste it, expressed to the captain, resulted in an out-of-the-ordinary crustacean dish. The

W. of the Maresca

^{US} being set before
~~me~~ next dinner time.

meat is much like that of any other crab. The abdomen cooked along with it, however, is full of "melted butter", the oily ^{body} fat rendered liquid by the heat of cooking, ~~and~~ ^{his} into which one ^{first} dips his chunks of crab meat ^{It is} an epicurean treat, par excellence, and beyond compare.

That a robber crab can open coconuts - young, or fully ripe with the tough outer husk still on, or just the fully ripe "nut" itself - is ~~still~~ ^{no longer a} moot point, ^{with me. though} I have yet to meet an eyewitness to such a performance. Though I have changed my opinion from pro to con and back again in the light of statements made by various naturalists, I feel more than ever that a fully grown robber crab in good condition can open a ripe coconut in its husk if he is so minded. He possesses the "tools" and the muscular ^strength to successfully accomplish the task.

It is hard to say which of the islands visited we shall remember longest. Each of these Society Islands has its own peculiar charm, and equally lovely people, and some experience ^{or other} connected with it that will stay with ~~us~~ ^{one} as long as ~~we~~ ^{he} lives. For me, at least, it was the ~~night~~ ^{the} night, three days after the picnic on board ship mentioned above, on which Dr. Rehder and I went out on the Bora Bora reef.

The natives go lobster hunting on this reef at night, and as we were anxious to participate in such an excursion, the Captain arranged ^{to have} two experienced fishermen to take us out on Friday ~~April 26~~ April 26, two nights before we were to leave Bora Bora. As these men lived in Vaitape, he moved the "Mareva" over to the

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pier there. While awaiting them, we visited the local school teacher, Henry Moua, who had a fine, though small, shell collection. Neither Rehder nor I have ever seen so many ^{fine shell} ~~small~~ collections in so small an area as the Society Islands.

It was 7 o'clock when we took our places amidships in a ~~very~~ narrow dugout canoe with outrigger, and expert paddlers fore and aft. The reef ~~was~~ farther out than it looked from shore, and when the canoe grounded on it a good half hour later, we waded "ashore" with the bowman. His companion remained in the canoe, keeping it abreast of us on the lagoon side as we traveled the ~~length of~~ ^{along over} the reef. First, however, our guide lit the Coleman lantern he had brought along, and we lit ours. Here this type of lamp has become the "torch", replacing the blazing faggots of bygone days. These ingenious Polynesians have now added something new, making the Coleman lantern a far better torch. Ordinarily it swings too low to be safely carried ~~ashore~~ ^{by its bail handle}, or over the reef where a gully or tide pool has to be crossed, or where an occasional roller floods over the reef. These fishermen have improvised a handle which supports the lantern underneath and holds its sides tightly so that it can be held high in front of one, or overhead in order to illuminate crevices in the reef or the depths of tide pools. We came to grief carrying our Coleman by its bail ^{handle}, as might well have been expected, when one of us stepped into an unexpected ~~Y~~ waist-deep pool. Too late did we appreciate the conditions to be encountered or learn of the fishermen's very practical device.

I have been on reefs and shoals in the Caribbean with a light at night, but never before had I seen anything remotely approaching the vast expanse of this barrier reef. There may be other mid-Pacific reefs that equal or surpass it. In the Atlantic there are some spectacular reefs, but nothing so wide and impressive as the stretch of reef we travelled on that ^{April} night, ~~of April 26~~. Not until recently did I learn that this Bora Bora reef had elicited much the same comment, thirty years before our visit, from William Morris Davis: "The barrier reef of Borabora is exceptional in the breadth of its flat, which is up to a mile wide" (The Coral Reef Problem, American Geographical Society, 1928, p. 303).

As observed in similar excursions in other parts of the world, the eyes of crustaceans brilliantly reflect the light from lantern, ^{fl} flashlight, or torch. Their eyes shine as though they were beads of molten copper, ²⁰ (fluorescent) ~~are they?~~ At night the lobsters come foraging over the reef flat from their refuges and hide-aways on both sides of the reef; from which side they come in greater numbers — lagoon or sea — I have not ascertained. Ours ^{this night} was a fair haul of ^{spiny} lobsters of no great size. The ~~young~~ ^{or} ^{would seem to} ~~specimens~~ indicate that they are too intensively fished. However, with the proverbial luck of an amateur, I got the largest one, ~~this night~~, about 13.5 inches long from fore-edge of carapace, or dorsal shield, to hind margin of telson, or end of tail. Indeed, the fishermen with us, and others later in Vaitape, remarked that lobsters of that size were very seldom taken, and that they had not seen one as large

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in a long time. The second largest was scarcely ~~over~~ 11 inches in length.

For our spoils we carried a bucket each, ~~these~~ ^{the} bails ^{of which} were just as unsuited for work on a reef at night as those of our Coleman. Instead of bucket or basket the fisherman had a sizeable pannier woven of palm leaves, supported by a strap of the same material over the right shoulder and crossing the chest to the left side. Ever so often we came upon ~~a~~ large, almost lake-like, tide pools too deep to wade, or deep crevices that we had to skirt. We did encounter several good surges of water across the reef but none that posed any serious threat; the fisherman always warned us in time. ~~Aside from lobsters, our haul on this first time out collecting in this fashion was not particularly significant.~~

There is always a "pay-off" to every adventure, and ours was the rain squall ^{into which} ~~that~~ we ran ~~into~~ ^{our} on ~~the~~ way back to the "Mareva". Neither Rehder nor I ^{shall} ~~will~~ ever forget it, or Bora Bora where ~~we~~ ^{we} ~~en-~~ ^{countered it} happened. This squall was ^{like the one} ~~just~~ ^{experienced} that Henry Strauss went through ~~on~~ the previous Wednesday when he come out from Vaitape in that toy ~~canoe~~ ^{it was} canoe to see us; ~~it~~ ^{it} was much the same only more so! We had no idea how really cold these tropical rains can ~~be~~ ^{feel}, thin-shirted as we were. If you want to know how it felt, try wearing a wet cotton shirt on a dark night in a chilling wind while sitting in the bottom of a narrow canoe ~~that~~ ^{was} shipping water, with no chance to do any bailing. Half an hour of it and you are a mass of goose pimples, and your teeth are going like castanets—yes, ~~the day~~

an evening

~~experiences~~ long to remember! I do not know who was the colder - Rehder, I, or the fishermen. They did not seem to mind. Were they more of the stoic type, or just "plain" conditioned to this ~~kind of weather~~ sort of thing?

On Saturday morning rotenone "cakes" were put out in a likely looking place inside the outer reef. The operation of gathering the affected^{ed} fish kept us busy through the forenoon, even though we had a very expert skin diver helping us, Harry Shupack, who had come down on the "Mariposa" with us, ~~from Honolulu~~, and was now vacationing at Vaitape. So many were the fish that, besides desired ^{specimens} we had an abundance for our larder ~~also~~. a number of After dressing them, ~~generous~~ we had generous helpings of fish-head chowder a la Temarii for lunch. Getting the specimens fish saved for injected, labelled, wrapped, and bedded down in our tanks occupied ^{all} that afternoon. We ~~then~~ returned ~~back~~ to our old mooring in Faanui Bay, and after a lobster supper we had company. Word must have gotten around that we were to sail at daybreak, for the girls who had posed for photographs, and who had stayed for lunch some days ago, came by to give us a farewell "sing"! Sing they could and did, a variety of charming songs in Tahitian and French, in delightful harmony and without accompaniment. One song in particular went over so well that I was moved to ask for the name and words. It was "A Maid of Sorrento" a French ~~song~~ ^{ballad} which the girls had learned ~~by the girls~~, no doubt, ~~from records~~ ^{over the air} from records brought from Papeete, or from the "Radio Tahiti".

half past five in the

The mooring lines were gotten aboard at ~~four~~ morning. Half an hour later we were well out of the pass. The sun was just peeking over Bora Bora's Mounts Otemanu and Paiha, and as I was asking the Captain to have a look at this very beautiful sunrise, I realized that I did not have on my earphone. Without it conversation, as hard of hearing as I am, is no fun for me or for anyone else. It was neither on the shelf by my bunk or in any other likely place. It must have been left on a rock by the "spring" late last night while taking a "Saturday night" shower with buckets of spring water. The oversight cost us an hour's time - 30 minutes in and 30 minutes out again!

turned out to be

It ~~was~~ a calm, clear, sunny day, with a light easterly breeze. On this run to Raiatea the Captain wanted to show us a well-known, large marae at Tevaitoa, and several figures or symbols carved on boulders nearby. Marking them out with chalk that he had thoughtfully brought along, we did get a snapshot of them. That done, the Captain went on to Uturoa, the seat of the Raiatea government. ~~Just~~ ^{to judge} from the waterfront installations it is an important port of call. Everything was shut down, as it was Sunday, and here we were, so very short of formalin, due to that accident on the way to Bora Bora. We needed it badly, not only for what might be collected here but also at Huahine in the course of the next five days. Among the townspeople who came down to see us was Charles Brotherson, the town barber, and -- how lucky can one be -- a Seventh Day Adventist, to whom our Sunday was just another work day. As soon as he learned of our

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formaldehyde difficulty, he went off to see the local pharmacist and promptly brought back the promise that all available, about a gallon, would be delivered to the ship first thing Monday morning, April 29.

When I inquired of Mr. Brotherson how he came to be here, he replied, "It all started in 1851 with the Australian Gold Rush when my grandfather on my father's side, Peter Broderson was his Danish name, got the gold fever along with many others. Though sixty of them boarded a ship somewhere in the States, they got shipwrecked in the Tuamotus. Only 7 survived, and by some means continued to Tahiti, and lastly Raiatea. It is quite a tragic story, because two of my grandfather's friends and shipmates committed suicide a few years later. My grandfather, badly shaken by the loss of his friends, found relief in hard work for a German firm trading in the Islands. He married my grandmother who was the daughter of a ship captain by the name of Hunter. Of that union 9 children were born. My father, born in 1888, was the third. This was a few years before the Island of Raiatea became a French Protectorate.

"At the age of 14 my father was sent to school in the States where he stayed for 12 years. After he finished school, he worked first in Iowa, and later in San Francisco. Always he wanted to come back to his family and these lovely islands which he never forgot. He did come back in his 26th year in 1914, and married that very same year Elizabeth Horley, the daughter of an English stone mason. Born in 1918, I was the first of their 10 children.

"As for myself, I have not much to say, except that I must thank God because I was born in this beautiful Island, and I do pray to Him that it will stay this way for ever. We have been visited by many tourists from all over the world in these last few years, a big Cinema Company which is not the best thing for these Islands, and of course various government officials."

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Soon the Captain moved the "Mareva" over to an anchorage off the Teavapiti Pass where we went collecting over the shallows between Taoru islet and the fringing reef. The weather continuing fine, the shore and coral formations of islet Tetaro were intensively worked over the same afternoon. For the night, we returned to the wharf at Uturoa to leave there at eight in the morning for Huahine.

Before leaving though, I ran back to Brotherson's barber shop at the corner of which I had seen a very remarkable piece of wood carving, a regular Polynesian "totem pole." Mr. Bredin had commissioned us to purchase, if possible, some native wood carvings. Such things are now extremely rare, or sequestered in museums, so when I first saw this one I inquired as to its history and availability. "Oh! that," said Mr. Brotherson, "is a prop left behind by the last movie company making a picture here. They brought it with them from Hollywood!" (put photo of it here)

En route to Huahine, the Captain stopped at Opoa to show us another famous marae, this time the most revered of all in the islands. By its great central columnar stone, the Polynesian kings of yore were crowned! In taking photographs of it, we longed for a native in costume. The Captain obliged by divesting himself of most of his clothing, ~~he~~ wrapped ^{ing} a couple of palm fronds around his middle and improvised ^{ing} a crown from a coconut palm bract!

Huahine we shall remember as the sweetest smelling of the islands. The full-flavored aroma of vanilla could be appreciated for some distance off shore. It became more pronounced as we pulled along-side the seawall at Fare, half past two on the last day of April. Vanilla is an important cash crop in the Society Islands; in 1957, 177 metric tons of vanilla beans or pods, valued at two million dollars, were exported.

File 3
1957?

Awaiting the "Mareva" at Fare were two 100 pound blocks of ice for the large ice chest in the pilot house. The order for ice had been placed in Papeete by radio, and this very afternoon were left for us by the inter-island boat, the "Orohena." Packed in a thick "mat" of shredded coconut fiber, and sewed in burlap, the ice arrived in good shape with scarcely any loss from melting. Although we were in the sunny and often rainy South Pacific latitudes, "the ice man cometh" as dependably ~~was~~ as he used to come at home. After getting ~~the~~ ^{our} ice aboard, the "Mareva" moved down the lagoon ~~to~~ ^{some three} ~~four~~ ^{four} miles to an anchorage in Baie de Bourayne where ~~from 3 to 5 in~~ the afternoon ^{was spent} collecting ~~was undertaken~~ in the shoaler waters of the channel dividing the two islands within the one fringing reef, "Huahine-nui" and "Huahine-iti." That night tow netting by Dr. Bowman provoked unsuspected luminescent ostracods in the catch to emit a succession of brilliant flashes of intensely blue light. There is always something new being turned up in collecting, morning, noon, or night. This islet, Rehder and Cutress scouted after all hands returned from the reef at half past four. Later we moved nearer Fare, and the next morning explored the fringing reef to the right of the Avamoa Pass close by. This was as intriguing and fruitful a reef ^{as} we had yet seen, ~~and so~~ ^{and so} in the morning we set out rotenone cakes for fish. ~~at~~ Unfortunately the returns were poor due to unexpectedly strong currents, and a rising tide.

On Huahine is a great lake, Lake Maeva, where since long before the advent of the first European navigators, the Polynesians prosecuted a still famous mullet fishery. When fish are wanted, the fishermen in their canoes set up a great "drive," beating the water with their paddles to frighten the fish into long V-shaped traps or pens of coral rock. Their combined openings stretch completely across an arm of the lake. At the wide open ends are stone shelters for the "watchmen" who close with nets the entrances of the several V's to prevent the fish from escaping. The fishery was not in operation at the time of

The lakes

photographed too.

our visit, so the opportunity was taken to collect some of its invertebrate inhabitants. On the return to Fare in ~~the~~ ^{our rented} hired truck, we stopped to take photographs of the fishing village--much of it is on pilings ^{and so} reminiscent of the Swiss lake dwellings, parts of Venice perhaps, or some ^{Far Eastern} villages ~~in the Far~~

~~at the~~ ^{was} and of The Maeva elementary school at recess as we passed by ^{and so was} Friday

A night, May 3, was to have been devoted to ^{reef} collecting ~~at the place where we had used to go that forenoon.~~ ^{(but,}

⁽ a violent wind storm which blew up rather suddenly from the south west roughing up the sea ^{not only} rendered this impossible ^{but} and promised also to delay our ~~departure.~~ ^{Forewarned me} ~~getting away.~~ ^{and by} The Captain ~~however,~~ ^{was} upped the anchor ~~at~~ seven twenty-five ~~was~~

headed for home. In spite of the ~~still~~ unruly sea, the "Mareva" made good time. Rounding the northeast point of Moorea by 9 in the morning, the Captain had the "Mareva" back in Papeete shortly before noon on Saturday. Although this ^{was another} ~~proved a~~ rainy day, no time was lost watering, refuelling, and getting ~~the~~ ~~most~~ ~~of~~ provisions aboard. In less than two weeks our time would be up and we had not yet set foot ~~in~~ ⁱⁿ Moorea, or ~~any~~ of its waters.

Sunday was as wet as Saturday. Monday all preparations for departure having been completed by 2 o'clock with "Good clear weather - fine sea" as the Captain noted in his log, the course was set for Opunohu Bay, Moorea.

There is no doubt that fond remembrance of visits to Tahiti, and to Moorea especially, during his three years in the South Seas inspired Anatole von Hugel to write in the Encyclopedia Britannica for the first time, in 1888 (9th edition, vol. 23), that "All voyagers agree that for varied beauty of form and colour, the Society Islands are unsurpassed in the ~~Pacific~~ ^{Pacific}. Had the Baron travelled as widely among the Greater and Lesser Antilles and through the Caribbean and adjacent waters, he surely would have included the Atlantic ^{so high} islands in that comparison which pays such a high tribute to the beauty of the

Society Islands. In that tribute he went on to say: "Innumerable rills, fed by the fleeting clouds which circle round the high lands, gather in lovely streams and, after heavy rains, torrents precipitate themselves in grand cascades from mountain cliffs - a feature so striking as to have attracted the attention of all voyagers from Wallis [1767] downward."

Going into Opunohu Bay, we passed on the port bow, the palm thatched house in which Jack Randall, his wife, and daughter had spent most of the past 12 months studying the habits and behavior of the local open-water~~s~~ and reef fishes. Of all these he made rather generous collections for future systematic study.

Toward the head of the Bay on the ~~west~~^{east} side, the Kellums have their home, and farther on, a plantation of nearly 200 acres. The Phillipses and Miss [†]Ticomb of whom we had seen very little over the past several weeks were good friends of the Kellums, so we were pleased to be able to take them over for a visit. This they prolonged for several days at the attractive hotel in the equally beautiful Paopao, or Cook's Bay. But we went on about our business of collecting with a very wonderful assist from Mr. Kellum himself. He guided us to the productive areas which he had discovered along the shores of the bay, in the lagoon outside, and about the Piopio and Toatane reefs on the west side of the Avaroa Pass. This ^{<is the} pass ^{ing} gives access to Cook's and Opunohu Bay.

The night of our arrival baited wicker mollusk traps were put out but the catch when they were hauled in two days later was disappointing; nary a shell, just a single crab and ^a~~an~~ small goat fish.

Wednesday morning, May 8, at 6 o'clock, we accompanied Mr. Kellum to another of his favored collecting grounds - the reef between the islets of Tiahua and Fareone -- where the ensuing seven and a half hours were spent. Sorting took the rest of the daylight hours, during which Drs. Bowman and

Rehder explored the Opunohu River at the head of the Bay. From its waters they brought back a score of snails, a fish, 3 crabs, and 4 shrimp.

With the continuing good weather, the reef east of the Taareu Pass was visited Thursday forenoon, and dredging undertaken in the afternoon. The dredge was biting sharply on the rough bottom when an alarming jerk on the line rudely informed us that the dredge was firmly anchored. Dredging Society Island lagoons is always ticklish business. We were pretty close in. The sudden stop caused the "Mareva" to swing in alarmingly toward the coral studded shore line. Before we could cast the tow rope loose the Captain, more concerned with the safety of the ship than any specimens that might be in the dredge, quickly cut the rope. A man of foresight, he was alert to just such a contingency. ^{Fortunately offer} ~~But since~~ Jack Randall and his aqualung had left us ~~after~~ ^{we} provided each dredge with a light buoy line and ^{glass ball} float so that it could readily be located should anything happen to the tow rope, or ~~should the dredge have to be cast adrift.~~ In the evening we tied up at the Cook's Bay Hotel dock. All hands from Captain down had dinner ashore for a change. Here we missed the Phillips-Titcomb party as they had earlier returned to Tahiti to avoid the incessant, heavy rain to which we ~~were now~~ ^{being} subjected from about seven that evening on through the next morning.

Mr. Kellum's knowledge of good collecting grounds stemmed from his interest in building up an excellent series of more species of shells than we were able to turn up in our limited stay in Moorea. He showed us more than a few "tricks" for finding this or that species of mollusc. He knew the habits of many of them as well as he knew those of his children. Very generously too, Mr. Kellum let Dr. Rehder select ^{goodly} ~~a~~ ^{his} lot of duplicates for the National Museum.

Off Cook's Bay, we used ~~up~~ the last of our rotenone, but again the local currents ~~and rising tide~~ spoiled ~~the~~ ^{our} "fun."

Our last collecting in Moorea was done at the "Captain's place." Though he lived and had his home in Tahiti, he had recently purchased a modest holding here on the shores of Nuarei Bay. No wonder he was proud of it -- a typically Polynesian layout among the coconut palms, beautifully green, and well shaded; before the house a wide beach of golden yellow sand; across the green-blue lagoon and surf-whitened fringing reef lay the darker blue of the open ocean under a cloud-flecked sky; garden patch to one side; a stream of fresh water to the rear, superlative fishing out front; two hours by boat from here or from Cook's Bay to civilization in Papeete! What more could one ask or want of French Oceania?

The lovely weather that ushered in this day was rudely interrupted at supper time by violent gusts of wind from the S.E. -- two hours of squalls before they gave way to a light, as the Captain called it, "dry" breeze from the North. At six in the morning of the 13th of May we cleared the Vaiare Pass for "home." At eight we came to anchor in Papeete. We certainly seemed to be running head-on into a rainy spell. The luxuriance of the vegetation on all the islands bespeaks of frequent showers. But what about temperatures? The average is 77 degrees F; low, 59 degrees and high in May around 84 degrees. The yearly rainfall totals about 48 inches of which 29 fall in the December - March period, and 19 inches, April through November.

Day times now we were busily engaged in packing specimens, gear, and personal belongings. Evenings we were equally busy in other directions as friends invited us to one farewell party after another -- Mrs. Phillips to dinner with Bengt Danielson of Kon Tiki fame and his wife; the Wacksmuths and their daughter Barbara one night -- he was the Chef de Sûreté for this part of the French world; Jack and Mrs. Randall and daughter Laurie another evening aboard the "Nani," and so on.

In fact we were so busy evenings that it had to be breakfast with Mrs. J. Jacquemin, secretary to the Syndicat d'Initiative et du Tourisme de Tahiti, on our very last day so that we could see her beautifully ordered collection of Tahitian shells. Shell collecting seems to be the ~~great~~ ^{abiding} interest, or at least pastime of ^{al-} most everyone ~~we~~ ^{we met.} It is hard to say who has the best or most complete collection. Again the Museum ~~is~~ ^{became} the fortunate recipient of some very choice specimens which Mrs. Jacquemin presented to Dr. Rehder for the Museum's Division of Molluscs.

The night before leaving on the Teal Airways amphibian for Fiji by way of Aitutaki Atoll, all of us and these friends had dinner together at "the Chinaman's" ^{The Waikiki Restaurant} with Mrs. James Norman Hall, and our tomorrow's flight crew.

We had corresponded with Mrs. Jacquemin in the course of organizing this expedition, about facilities, living conditions, supplies, and vessel transport throughout the archipelago. It was our great good fortune also that she recommended Captain Temarii to us, that we were put in touch with Jean Bres whose distillery furnished the alcohol we used, and that she introduced us to the then Governor who enabled us to obtain that alcohol at government rate. She also took us to visit the Papeete Museum where the curator Miss Aurora Natua has on exhibit some examples of native art. Authentic specimens are well nigh impossible to obtain today. Mrs. Jacquemin is ^{also} a very good friend of Mr. Baldwin-Bambridge, representative of the Matson Lines in Tahiti. Thus it came about that he invited us to the luncheon, Polynesian style, baked in an open pit with heated stones, and the hula dance performance at his estate where this delightful entertainment is staged for the passengers of the Matson liners during their one day stop-over in Papeete on the way to and from "down under."

Despite this "busy-ness" night and day, we tried crowding in one last collecting trip, to Port Phaeton on the southwest side of the so-called Isthmus

of Taravao, an appendage or off-shoot of Tahiti proper. This effort was attended, I believe, by the roughest seas yet experienced. Wind and waves became so bad that the Captain had to call off the venture. He had difficulty in coming about and heading back to our harbor anchorage. This ^{unproductive} "manouver" as he called it ended our exploratory work in the Society Islands.

Earlier we had also been hospitably entertained by Dr. and Mrs. H. N. March and daughter Jane. Dr. March was carrying forward the good works of the China Medical Board which transferred its activities to these islands, after this humanitarian health organization had been made unwelcome in Communist China. Here the Foundation is engaged in eradicating from these happy islands that repulsive scourge, elephantiasis. Their campaign to date has been remarkably successful ⁱⁿ combating this mosquito-borne disease. One island after the other is being freed of it. By letter Mr. Egbert Walker, with our Department of Botany at the time had introduced us to the Marches. He had been corresponding with Jane regarding the collection and identification of Society Island plants.

Not to be forgotten is the personally conducted tour on which Captain Temarii took us to the leading points of interest in and about Papeete, including King Pomare's Tomb, and Point Venus where stands the monument commemorating the landing of Cook's Transit of Venus Expedition in 1769! And ^{at least} last but not ^d least the delicious home cooked meal of Polynesian dishes with which he and Mrs. Temarii honored us afterwards: aperitifs, soup, fish, chicken, salad, and a bountious ^e dish of mixed fresh fruit and melons sprinkled generously with shredded ^d coconut, several wines, and after dinner coffee.

Among the many who assisted our several endeavours in one way or another are also to be numbered: Mr. Francis Sanford, teacher of manual arts in the Papeete High School. Formerly stationed on Bora Bora, he transferred here to

secure advanced education for his children. He had been on Bora Bora for over 17 years and in that time kept one of the most wonderful guest books I have seen anywhere, virtually every visiting yacht had left a photo, sketch, or pertinent note in that book, regarding its itinerary, and personnel. The book is a veritable history of exploration, adventuring or just plain yachting for ~~the period in question~~ this part of the South Pacific for the period in question. One discovered many familiar names, and indeed also some of close, dear and since departed friends - Karl Schmidt, Albert Herre, and others of the Crane expedition of 1937! Harry Pidgeon had also called there, the Yankee, and Gifford Pinchot on the "Mary Pinchot."

Mr. Sanford like so many others has a remarkable shell collection but his ranges more widely through the islands. ^{than most} We thoroughly enjoyed his lovely home and hospitality for the altogether too short time we could spare to visit him. ^{other} An exceptionally beautiful/~~display~~ ^{collection} was that of "Turia" of whom George T. Eggleston wrote in his Tahiti, Voyage through Paradise. This collection was mostly of her own gathering. The day we called to see it she had just returned dripping wet from diving for shells in the lagoon. Mr. John Reasin, ^{who was} Mr. McConnaughy's agent in Tahiti, deserves more than just a word of thanks. He facilitated all our work and did as much as anyone to make our collecting the success it was. Here again, as many times in the past, I have been moved to repeat the old, time and shop-worn, cliché "It's a small world." These ^{past forty} ~~14~~ ^{and more} years I have been a resident of the sovereign state of Maryland and Johnny Reasin was, during part of that time, a member of that State's Highways Department in my area!

Though more or less ideal for our purposes, the "Mareva" did not have enough room on deck to hold all our chests, and crates of gear and supplies and have sufficient work space left over. We had to leave a lot of them ashore from which our stocks aboard were replenished between island cruises. Most

generously "Etablissements Donald Tahiti," one of the leading import-export firms in the South Pacific, permitted us to use part of one of their storage sheds. We are indebted to them for this very considerable help as are we also to Miss Janine Laguesse whom we met aboard the "Mariposa." She was returning from a vacation in France. In Papeete she owns one of the leading bicycle agencies. So after we got through customs, and before we got to know Donald she was able to care for much of our personal impedimenta ~~which we had stored in Donald's more spacious shed.~~

Handwritten:
 ?
 .

May we be forgiven for not making more specific mention of the helpfulness of these, and all the other friendly folk we met in the course of our five weeks in and about the Islands.

We came, we saw, but in our recollections find that we were ["]conquered["] by those lovely Isles of Paradise and the lovely people who live there. As James Norman Hall has put it: "There is a magic about these islands that is time defying; that loses nothing of its power, however long continued one's association with them may be." To finish out his thought and heart-felt conviction, we add, "or however long, or far away one ever may be." He died in Papeete July 5, 1951 in his 65th year.

This brief recapitulation of our goings and comings in French Oceania recounts very little of the expedition's scientific results, actual, potential, and yet to be published upon. The worth of this - as of all similar museum expeditions - must after all be evaluated in terms of the recorded observations and the scientific study materials brought back for examination and report.

We occupied 129 collecting stations -- dredging, tow netting, and dip-netting over the ship's side with the aid of an electric light for plankton, microscopic organisms of all kinds, larval forms; shore and reef collecting for fishes, crustaceans, shells, coelenterates, and such other invertebrates as we came

upon. Yes, we were quite "omniverous." There were also six, unnumbered miscellaneous collections, 20 soil samples, some rocks, and several bottom samples together with Polynesian skeletal remains (comparatively rare in ~~the~~ ^{our} National Collections), several long bones, and three, albeit fragmentary skulls. A preliminary count totals over 20,600 specimens of marine invertebrates of which better than two-thirds were mollusks; 1600 fish, and a few insects and marine algae.

Our airflight home -- Teal^{and} Pan American -- was speedy, comfortable and I might say verging on the luxurious, with Teal amphibian via Aitutaki Atoll, Apia, Samoa to Suva, ^j ~~Figi~~. There we boarded a huge Pan American Constellation homeward bound from Australia to San Francisco via Canton Island and Honolulu. In Honolulu, Ray Greenfield formerly with us at the Museum and later with the Biological Survey in Washington, and now with the Plant Quaranteen ^a staff there, welcomed us and our live robber crabs, and passed us on to Customs. Debarking at the San Francisco air port, May 22, 1957 except for returning to Washington marked the end of another memorable Smithsonian-Bredin Expedition. We and the Institution are deeply grateful to Mr. and Mrs. J. Bruce Bredin of Wilmington, Delaware not only for their thoughtfulness and generosity in making the expedition possible, but also for suggesting it in the first place.

45

Addendum

Since the foregoing was written, Dr. Rehder brought to my attention the fact that the first Smithsonian expedition bringing back anything of scientific interest from Tahiti was that of our former Secretary, S. Pierpont Langley in 1901. He returned from an informal, five weeks recreational trip to the Society Islands with one of the pumice-like stones from a fire-walker's pit. Notes from his diary were published in the National Geographic Magazine for December the same year, and a more detailed account of the "fire-walk" ceremony which he was fortunate in witnessing formed part of the Appendix to the Smithsonian Annual Report for 1901 (1902; pp. 539-544.)

The Smithsonian-Bredin Society Islands Expedition, 1957. ⁽¹⁾

of Captain Cooke,

Transit Venus 1769

Shades of Herman Melville, of Typee, Omoo, and Moby Dick; of Pierre Loti, Gauguin; Joshua Slocum and Alain Gerbault; Robert Louis Stevenson, Jack London, Rupert Brooke, ~~and~~ James Norman Hall! All these and many more seemed to come alive when Mr. Bredin proposed our going to the French Society Islands —

Tahiti, Moorea, Raiatea, Huahine, Bora Bora.... Those romantic, and in truth, Isles of Paradise in the far blue yonder of the South Pacific.... names to conjure with. All hold something beyond dreams and wishful thinking, for the explorer, the scientist, the writer, ~~the~~ poet, artist or adventurer.

Although we left Washington quietly and without fanfare, this Smithsonian expedition ^{really} went off with a "bang"!

Thomas E.

(2)

No sooner had Dr. Bowman, the expedition geologist and I foregathered ^{for lunch} at his parents home in San Francisco, that March 22, ~~the~~ — the day before the "Mariposa's" departure for the South Seas, than the city "threw" the second most severe quake in its recorded seismic history. ~~It~~ ^{This} registered 5.4 on the Richter scale as compared with ~~6~~ ⁶ for the catastrophic quake ~~of 1906, just fifty one years before to the~~ of April, 1906, just fifty one years before, almost to the month.

The ^{senior} Bowman's live on the sunny south side of Market Street where his widely known thoroughfare passes over Twin Peaks ~~feet~~ feet above sea level and a good three stories above the next street down hill. Perched on the edge of a precipitous declivity, the house commands a magnificent ~~panoramic~~ view of San Francisco Bay. Tom and I were seated before

California, and to Captain Hancock's "Velero IV", a floating marine laboratory of par excellence, especially designed and equipped for physical and biological oceanographic investigations.

miles and

~~and 2 miles~~

Four and a half days later we were welcomed in Honolulu by several friends of long standing Mrs. Arthur de C. Sowerby whose late husband was the principal contributor to the National Museum, superlative representation of the larger animal life, mammals and birds of North China and Manchuria; and Mr. Ernest N. May of Wilmington, who, with Mrs. May entertained us ~~at dinner~~ ^{that evening} in their beautiful sea-side home.

Mr. May ^{is} a brother-in-law of Mr. J. Bruce Bredin who with Mrs Bredin made possible this third of the expeditions bearing their name, which they have sponsored for the Smithsonian Institution. ~~During~~ ^{Earlier in} ~~the~~

* The first was to the Belgian Congo, 1955; the second to the Caribbean in 1956 (Annual Report for 1956 (Publication 4285, 1957))

day the biological laboratories of the University of Hawaii, the Bishop Museum, ~~and~~ the headquarters of the Pacific Oceanic Fishery Investigations, and the local aquarium were visited.

~~The~~ Indulgence here is asked of our many friends and colleagues in California and in ^{Honolulu} ~~Hawaii~~ for their ^{absence of} specific ~~ly~~ acknowledgments of their many kindnesses. Editorially ~~the~~ ^{paper} ~~was~~ not vouchsafed the space, or print ~~us~~.

~~Four~~ miles, ~~four~~ days

Another four days, ^{miles} ~~and~~ ~~farther~~ on, we ^{awoke to find ourselves} ~~were~~ steaming into the harbor of Papeete, ~~just~~ just as the ^{morning} ~~rising~~ sun was ^{beginning to} pink-tint ~~the~~ ~~early morning~~ ~~mists~~ and clouds ^{the} back-dropping the verdant, ~~sculpted~~ ^{valleyed} hills of Tahiti. From that entrancing-ly beautiful ^{sun-rise} ~~land~~ ~~scene~~ ~~stage~~ our attention was soon diverted by ~~the~~ ~~water~~

~~Approaching~~ a flotilla of outrigger canoes, being swiftly paddled out from shore by a host of Polynesian maidens in colorful native costume.

Not for long did their hanging fragrant frangi-pani leis over our shoulders ~~and~~ ^{with} kiss on either cheek keep us from ~~searching~~ ^{scanning} the shore. ~~Some where~~ ^{Some where} among the many yachts, from all over the world, moored along the sea-wall, was also the ^{56 foot} white-masted sloop, ~~the~~ "Mareva" ~~to be~~ ^{to be} our home and transport about the islands for the next seven weeks.

~~The~~ ~~Mareva~~ ~~a~~ ~~trim~~ ~~56~~ ~~foot~~ ~~overall~~ ~~was~~. We found ~~her~~ ^{her} most seaworthy, comfortable, and commodious, above and below decks, well equipped in all particulars, refrigeration, and auxillary diesel, and electric generator. She was ~~most~~ ^{most generously} made available to us by her owner, ~~Mr~~ ^{Mr} James McConnaughy, of the Kettering-Oakwood

Times of Dayton, Ohio. ^{And here it maybe added} ^{that} fascinated with
These lovely ^{happy} islands ~~and their inhabitants~~
Mrs McConnaughy wrote several fictionalized
historical accounts of the ~~Tahitian~~ way
of life and love. ^{Polynesian}

^{The Mareva}
Things had been so well kept ar-
board, by Tautu, a beaming ^{Tahitian} ~~Polynesian~~
sian, stout of heart and frame, deck-
hand, engineer, helmsman when need-
ed, fisherman, expert swimmer and
diver, ~~and all around handy man~~
that we were able to move aboard
the evening of our arrival. ^{the rest of the crew} Captain
and cook were ours to provide ~~for~~

no // Taking counsel, in view of the
compactness of the vessel, the ^{well appointed} ~~board~~
galley, its appurtenances, ~~refrigeration~~
and stowage ^{space}, we decided to
dispense with the services of the latter
and to divide the "house keeping" and at-
tendant chores among the four of us.

Times of Dayton, Ohio. With Mrs. Mc-
Connaughy, he had cruised among
these lovely islands ~~on more than one~~ ^{for several years.}
~~occasion a result~~ Resulting from her
experiences, and pen, were several
fictionalized accounts of Tahitian
history and way of life.

(The Mareva)
Things had been so well kept ar-
board, by Tautu, a beaming ^{Tahitian} ~~Polynesian~~
sian, stout of heart and frame, deds-
hand, engineer, helmsman when need-
ed, fisherman, expert swimmer and
diver, ~~and all around handy man,~~
that we were able to move aboard
the evening of our arrival. ^{The rest of the crew}
and cook were ours to provide ~~for~~.

no 4 Taking counsel, in view of the
compactness of the vessel, the ^{well appointed} ~~board~~
galley, its appurtenances, ~~refrigerator~~
and stowage ^{space}, we decided to
dispense with the services of the latter,
and to divide the "house keeping" and at-
tendant chores among the four of us.

Tom during the late war had done a stint with an army cook's detachment. Cress was a good second and ~~proved to be~~ ~~besides~~ a wonderful ~~marketing~~ ~~and~~ "purchasing agent" upon ~~and~~ Pehder and ~~myself~~ ~~devolved~~ the ~~duties~~ of mess boy. ~~I did not do so badly as~~ ~~mess boys~~ ~~as it turned out~~ ~~we~~ ~~lived well~~ ~~not~~ ~~always~~ ~~high~~ ~~and~~ ~~had~~ ~~many~~ ~~assistants~~ ~~from~~ ~~the~~ ~~Captain~~ ~~and~~ ~~but~~ ~~up~~ ~~when~~ ~~we~~ ~~were~~ ~~out~~ ~~collecting~~ ~~most~~ ~~of~~ ~~the~~ ~~day~~.

~~The~~ All said and done ~~it~~ ~~was~~ ~~an~~ ~~unparalleled~~ ~~and~~ ~~rewarding~~ ~~experience~~ ~~to~~ ~~go~~ ~~marketing~~ ~~with~~ ~~Cress~~ ~~at~~ ~~dive~~, or shortly after ~~of~~ ~~a~~ ~~morning~~. ~~By~~ ~~seven~~ ~~o'clock~~ ~~it~~ ~~was~~ ~~about~~ ~~all~~ ~~over~~. There were fresh fish of all descriptions, more valuable ~~to~~ ~~us~~ perhaps as specimens than as provender, but we did ~~not~~ ~~enjoy~~ ~~a~~ ~~lot~~ ~~of~~ ~~them~~ anyway, fresh vegetables, ~~tragic~~ and temperate zone, it seemed ~~also~~ ripe fruit, ~~and~~ ~~罐装~~ ~~goods~~ and always a plentiful supply of that ~~wonderful~~ ~~marvellous~~ ~~tasty~~ French bread ~~at~~ ~~5~~ ~~francs~~ ~~a~~ ~~loaf~~, ~~and~~ ~~at~~ ~~the~~ ~~legally~~ ~~established~~ ~~price~~, ~~everywhere~~ throughout the islands,

and as good, ^{fresh,} ~~and~~ crisp, and fragrant as you ever had in France itself.

Captain Temarii Teai was a real find and a man to enthuse about. One would have to search many a day to find ~~his~~ ^{the} equal as gentleman, navigator, ^{helpful} ~~and~~ ^{skipped} ~~ever~~ pleasant shipmate. Recently retired ~~from~~ ^{of} the colonial government's official inter-island steamer, ^{the} Governor's yacht ~~one might say~~, ^{so to} he knew ^{intimately} all the islands, reefs and passes, ~~and had~~ ~~friends~~ ~~ever~~ ~~current~~ winds and weather. Educated in France, he was equally at home with English, French and his native Polynesian tongue, and having friends and acquaintances throughout the archipelago was able to facilitate ~~our~~ stays and efforts everywhere. He proved moreover to be an excellent ~~cook~~ ^{chef}. Many were the times that we came in wet, bedraggled, and tired from working

over the reefs, dredging or seining,
 to find a ~~tasty~~ well prepared and
~~appetizing~~ lunch, or ~~supper~~ evening meal awaiting
 us. As cooks, and helpers ~~we~~ as
 we found time, we prepared many of the
 meals aboard, but the Captain and
 Tautu more than reciprocated, time
 and time again. ~~we lived high~~
~~wide and handsome~~ The Captain
 also became an expert at fine sorting
 our catches. ~~He~~ in some ways had
~~sharper eyes than the rest of us.~~

Quite a number of vials of small
 organisms ~~we~~ ^{they} brought back to the
 Museum attested his keen and intelligent
 our behalf. ~~the sharpness of his eyes~~

~~It is to Mr. J. J. ...~~
~~Mrs. ...~~
~~Colonial Tourist Bureau, we are~~

Knowledgeable

In Papeete we had the good fortune of meeting Jack Randall here with his ~~son~~^{wife} and daughter aboard his yacht the Nani. He and Charlie Cutress had been classmates at the University of Hawaii. Now he was engaged in studying and photographing the fishes of ^{French} Oceania and collecting specimens for the Vanderbilt Foundation then at Leland Stanford University. Learning of our venture he encouraged us first to visit the great atoll of Tikahau in the Tuamotus. With Jack aboard we hopefully set sail for them on April 8. With a favorable wind to begin with and a purring diesel, the Mareva was making good time, all of 6 knots, when unexpectedly the engine went "hot". The flexible oil line between pump and clutch had ~~blown out~~ ~~blown~~ burst. The Captain and Taut tried to ~~repair~~ mend and tape it, to no avail. There was nothing left but to go back for repairs. With sails

(so muddy) 13
that

sails alone, the return was slower ~~so~~
when we were about 4 miles off
the harbor at Papeete, the Captain
sent ~~about~~ ⁱⁿ the out-board powered
dinghy ~~with~~ (Dr. Rehder and Vah) ^(ahead)
to arrange for a tow ~~which~~ ^{this} soon
solved our immediate problem.

In mid afternoon of the tenth of
April we got away again and covered
the 140 miles or so to Tikahau in a
little ~~over~~ ^{over} ~~the~~ ^{the} next 24 hours.

Atolls lie low in the water and are not
much higher than the reef ^{wave swept} ~~forming~~ ^{enclosing}
~~and surrounding~~ their central lagoon.
At irregular intervals along and within
the crest of the reef accumulations
of coral blocks, fragments and sand
tossed up by the waves unceasingly
battering the reef, form picturesque
palm decked islets the larger of which
are invariably inhabited. ~~At~~ Breaching
the reef are one or more channels re-
sulting from the run-off of the water
→ over

In the mid-afternoon of the tenth of April we got under way again and covered the 140 odd miles to Tikahav in a little better than 24 hours.

piled up in the lagoon by the tides, wind blown spray perhaps more often by the breakers ~~that~~ on the windward side that run across the bare reef.

Atolls because of their lack of elevation and poor visibility always have been a menace to navigation in the South Pacific especially in the days of sailing ships which were rather helpless in tight situations exposed to ~~strong~~ ^{adverse} winds and currents. It is quite understandable that the numerous atolls within the Low Archipelago ~~carry also the designation~~ ^{on many charts and sailing directions are also called the} Dangerous Islands, a name first given them by — in —.

Go on top. 13a

The volcanic cone or cones surrounded by fringing reef within which is a relatively narrow lagoon with a number of passes giving access to the sea, as ~~are~~ with the Society Islands are the so-called high island of the South Pacific.

They are aids to navigation rather than otherwise as they are recognizable at sea for great distances even when below the horizon ^{over their peaks} for almost always there is a cap or cover of clouds indicative of the existence of a high island even when this itself is not visible

piled up in the lagoon by the tides
wind blown spray, and breakers that
~~run~~ ~~east~~ across ~~the bare reef~~ ~~in many places~~ on the windward
side.

Strong winds and squalls

(14)

~~Considerable wind~~ attended ~~this~~ ^{trip to Tikahau} ~~going~~ and no doubt hastened our progress. ~~As soon as we were anchored~~

~~inside the~~ The atoll was sighted shortly after lunch, but it ~~took~~ another two hours elapsed, skirting the reef, before we entered the Tuheiava Pass. No sooner was the anchor down ~~in~~ ^{on} the lagoon ~~inside~~ of Matiti islet, one of the several studding this reef, than Chief Teroro of the fishing village near

the pass paid us a visit. We were hesitant about using rotenone ~~in~~ ~~the~~ ~~reef~~ in as-much-as the ~~people~~ here ~~are~~ people here are mostly fish do a great deal of fishing.

He assured us ^{however} that ~~no harm~~ ~~would result as the~~ ~~fish~~ ~~there~~ ~~are~~ ~~migratory~~ ~~and~~ ~~do~~ ~~not~~ ~~belong~~ ~~to~~ ~~the~~ ~~same~~ ~~species,~~ ~~and~~ ~~that~~

our operations on the reef near our anchorage would ~~do~~ ^{occasion} no harm.

~~As it~~ ^{As it} was still too squally ~~to~~

Considerable wind attended
our going and I believe hastened
our

the seaward side

fish

The next morning ~~for~~ poisoning, we collected ^{along shore} ~~over the reef~~ ~~at the~~ outer side of the islet.

[leave about four double spaces blank here]

in five fathoms of water

The day following ^{dredging was at-} ~~tempted~~ ~~we started to~~ but both ~~our~~ dredges, one after the other would have been a total loss, if Jack Randall had not gone over with his aqua-lung and dislodged them from beneath the coral heads under which they had become ~~immovably~~ wedged. After lunch the Captain moved the Maraveu over to another islet, Mauai, on the far side of the lagoon.

Crossing ~~over~~ this sandy, palm covered island, we found ourselves on the windward side of ^{the reef that is} Tikahau, an atoll reef at its best ~~at its best~~. ~~Against its outer margin the~~ ~~great~~ ~~rollers~~ ~~break~~ ~~with~~ ~~a~~ ~~steady~~ ~~underlying~~

Against its outer face thunder
^{wide} ~~the~~ great rollers from across the
 Pacific in a steady roar, breaking
 into ^a high barrage of wind blown
 spray. At low tide you can
 walk over the flat of the reef
 and in the gulleys or race ways
 dissecting it. Through them the
 water boils with each surge of
 the sea ~~and~~ occasionally the
 crest of the proverbial fifth
 or seventh roller (always make
 sure of your count) floods (fiercely)
 across the top of the reef; ~~and~~
 woe betide you if you are not
 braced to meet it; ~~over~~ Back against
 the rampart ~~of the shore~~ forming the
 shore line are lumps and boulders
 of coral that the sea has ^{wrenched} ~~wrenched~~
^{or pounded} from the outer face of the reef. Under
 these and in interstices of the
 coral lining the gullies we find
 our treasure trove of little fish, sea-
~~anemones and sponges~~
 shells, and other invertebrates.

~~as we had planned it at low~~
~~break~~ tide

you may be forcibly brown down
maybe have your clothes stripped
off as you are washed or
perhaps hurled over the rough
upper surface of the reef if
not more seriously dealt with.

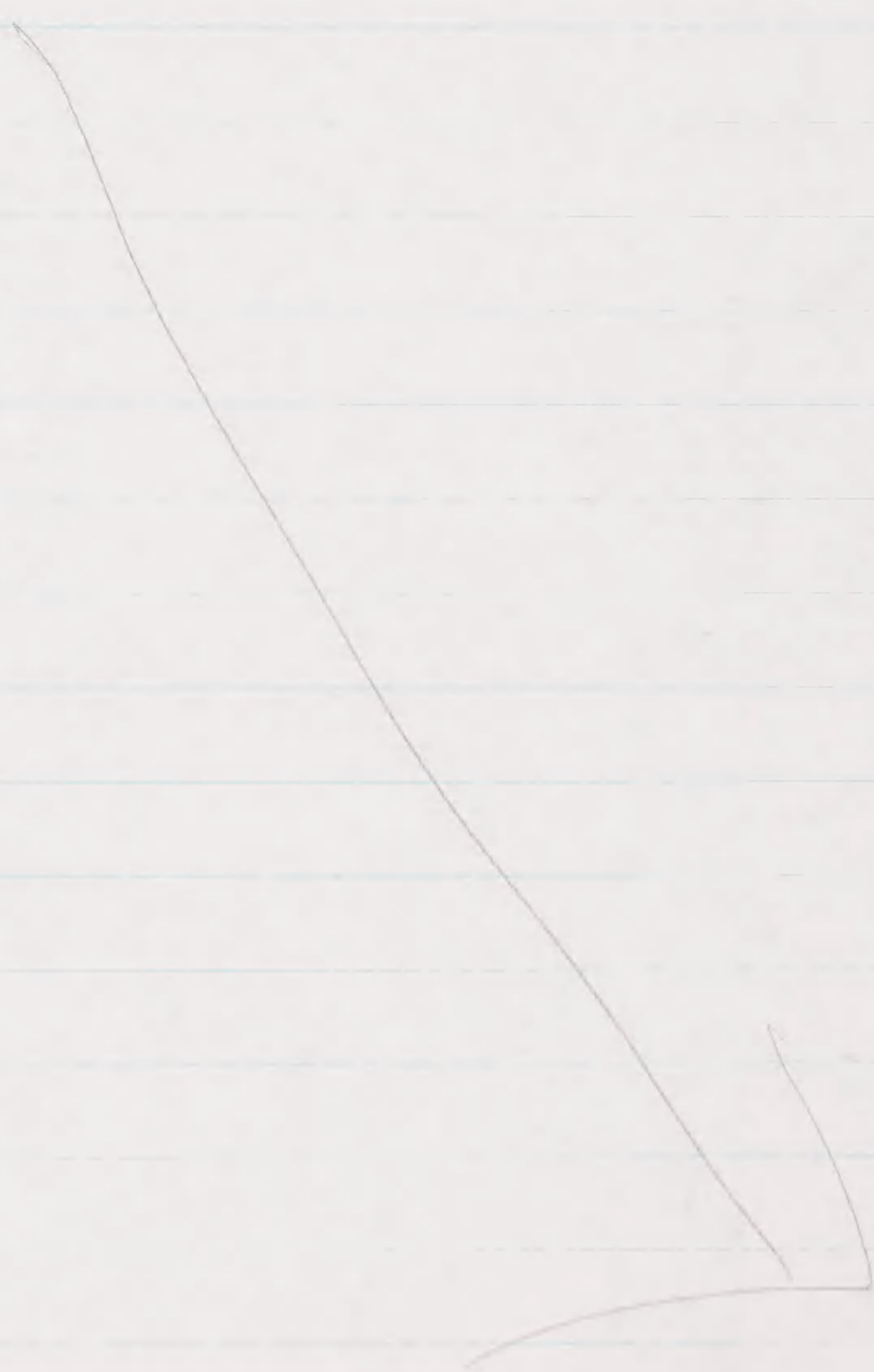
↳ go back to p. 16

11. On the lagoon side of Mauai several seine and dredge hauls were accomplished before returning to the Matiti anchorage in mid-afternoon. That night traps were set in the hope of getting a few rats, but the claws we got indicated that the land crabs were more forehanded than the rodents. ^{with} Tautu ~~who went trapping with~~ Dr. Rehder and ~~me~~ ^I ~~we~~ later ranged the outer reef with flash light getting ~~a number of shells~~ Tautu made the best haul a small robber, or coconut crab lurking along shore, the first of the ~~several brought~~ ^{several brought} ~~back~~ ^{to the Museum} ~~by the expedition.~~

The fish poisoning the next morning was more successful than anticipated and probably resulted in the largest collection made ~~at one~~ ^{at one} station in the course of the expedition. The ~~debris~~ ~~root~~ powdered rotenone ^{moistened} brought over the purpose, ~~mixed~~ ^{mixed} with along

with sea water was pressed into compact cakes. These were placed in suitable "pockets" in the reef before breakfast and given about an hours soaks. In that time the slowly diffusing poisonous extract of the derris root had paralyzed the respiratory apparatus of all fish coming within range of the ~~lethal~~ concentration where for the most part lying on the bottom and among the coral formations. All hands turned out after breakfast with water glasses face masks, dip nets and spears and retrieved some — fishes in the course of two hours steady work. But all this fish had to be injected, labelled wrapped in cheese cloth and "bedded" down in our copper tanks before we took off for Makatea ~~at~~ five minutes before 10 p.m. on our way back to Papeete. There was some urgency ~~to~~ our homeward voyage the refrigerator was out of

"cabin head" refused ~~was~~ to
 Commission, the ~~waste line head~~ do
 sanction, and as usual after after
 being out for a bit over a week
 water and fuel could bear replenishing.
 Thus ~~the search~~ ~~mine~~ hours it was
 deemed wise not to spend more
 than 8 ~~or~~ 9 hours at Makatea.
 Busy ones they were, and after another
^{boisterous} ~~squally~~ passage — squalls from around
 3 to 5 am.



Makatea is more like the "plug" or chimney of a volcanic crater than a volcanic peak so ~~high~~ ^{high} ~~straight~~ ~~side~~ ~~high~~ ^{and} perpendicular are its towering cliffs. ~~The top~~ ^{is} difficult of access, and the ~~top~~ ^{an} inclined rail way and with two platforms, ~~one~~ one counterbalancing the other in ascent and descent ~~for heavy~~ ~~trucks~~ ^{became} a necessity for heavy ~~trucks~~ ^{bringing} bringing down the narrow gauge cars of phosphate rock so that they could be run out ~~the elevated~~ ^{high} ~~arched~~ ~~bridge~~ ^{work} ~~for~~ ~~onto~~ the cantilever ^{bridge-} work extending out to sea ~~so that~~ ^{is} ~~the ships~~ ~~there~~ ~~so~~ ~~that~~ ~~the~~ ~~rock~~ ~~could~~ ~~be~~ ~~discharged~~ ~~into~~ ~~the~~ ~~freight~~ ~~cars~~ ^{for loading} which could not come closer to shore ~~and~~ ~~from~~ ~~which~~ ~~where~~ ~~it~~ ~~was~~ ~~neither~~ ~~practicable~~ ~~or~~ ~~feasible~~ to build a dock or pier.

This island and its valuable deposit ~~was~~ ^{is} formerly a German colonial possession ~~and~~ fell to the French as one of the spoils of World War II. ~~It~~ ~~was~~ ~~not~~ ^{being}

no 8/ Many years ago ^{the island ~~seems~~ ^{is supposed} to have been} ⁽²¹⁾
~~formerly~~ a sacred ~~burial~~ place for Poly-
nesian chieftants; ~~many~~ ^{remains} of
many of them are supposed to
be hidden in the numerous caves
honeycombing the cliffs. ~~Many~~ ^{Human}
bones have ~~been~~ ^{also} uncovered in
the course of mining the more
or less friable phosphate rock. To
obtain ~~some~~ ^{is possible} of these was one of
the reasons for stopping here. That
we were fortunate in ~~securing~~ ^{obtaining} several
was due to the ~~kindness~~ ^{personal interest} of the
phosphate company's resident physician
~~Dr. Rojas~~ ^{leave space for two initials} ^{In our quest.} He told ~~he~~ ^{he} said
that a team of French anthropologists
had been here a few years before
and that we might have some of
the skeletal materials that ~~they~~ ^{that}
had left behind. Too bad there
was no opportunity to explore
some of the ~~other~~ ^{side} caves
to all appearances, in-
accessible ^{caves in the face of the cliffs} ~~side caves~~. But ~~we~~
~~were~~ collecting over the reef
flats, and in the numerous large

and occupied the a considerable
part of the forenoon (22)

took
Tide pools had ~~to take~~ precedence over
all else. Dr. Rojas is quite an
authority on beetles, and has with
him a considerable collection made
in the large part on his previous
tour of duty in North Africa. Housing
facilities ^{on the island} are modern and comfortable
as are also those of the hospital.
With Dr. Rojas' family, wife and
daughter, are with him. He ex-
pressed the wish to ~~enter into~~ ex-
change ~~relations~~ Coleoptera. ~~In~~
~~return~~ for his kindness we
were able to do him one small favor,
that of taking his aqualung tanks
back to Papeete for recharging
~~along~~ with the island's mail, so
that they ^{tanks} ~~would be the sooner~~
could ~~come~~ ^{some} back with the next
supply boat, ~~soon~~ due shortly.

An hour or two after breakfast, the Mareva was again moored at her regular berth at the seawall not far from the Post Office. Supplies, repairs and the purchase of a steel drum in which to pack the fish that filled all of our copper tanks ^{which we need for our next foray} over hauling and packing ~~them~~ and the rest of our plunder, occupied most of our time this day and the next. Had also to go to the banks. Next the harbor reef close to the pass into Papeete was ~~explored~~ ^{quite a sized haul} and ~~those specimens~~ ^{of fish} ~~resulted~~ ^{became} pickled down. Having ~~learned~~ interested in our several pursuits,

Mr. James Cowper dropped by one evening to tell me of a skull that had been discovered in the ~~flower garden~~ ^{across the road from} ~~adjacent to~~ Turia's place. *

The very next day Dr. Rehder and I hurried out to the find with shovel seive, and carton. There was not one skull but two rather shallowly buried, and ~~rather~~ badly fractured by the gardner spading that particular flower bed. It so happened

Turia is the ~~caretaker~~ resident manager ~~of~~ ^{of} Mr. [2 initials] Crane's place ~~to the east of~~ ^{to the} out in the country east of Papeete.

Atolls by conformation and definition are low islands, and the group to which

~~Atolls as they are known are low islands lie low in the water & not much ~~scarcely~~ more higher than the wave swept reef that surrounds their central lagoons. At irregular intervals along the crest of the reef are ~~are~~ ~~palms~~ ~~decked~~ ~~islets~~ ~~islets~~ - accumulations of coral ~~of~~ ~~sand~~ ~~and~~ blocks, ~~and~~ fragments and sand tossed up by the waves that ~~contin~~ ~~unceasingly~~ batter the reef, forming attractive palm decked islets, ~~of the larger of the larger of which are generally~~ ~~on which the larger are usually~~ ~~inhabited.~~ ~~support~~ a fishing village or two. Those of ~~any~~ ~~size~~ are usually inhabited support a fishing village~~

The reef has ~~many~~ ~~more~~ ~~channels~~ ~~of~~ ~~water~~ ~~in~~ ~~the~~ ~~lagoon~~ ~~by~~ ~~which~~ ~~the~~ ~~islands~~ ~~are~~ ~~inhabited.~~ ~~of~~ ~~the~~ ~~group~~ ~~to~~ ~~which~~ ~~Vikana~~ ~~belongs~~ ~~and~~ ~~breakers~~ ~~and~~ ~~is~~ ~~quite~~ ~~appropriately~~ ~~called~~ ~~the~~ ~~island~~ ~~spray~~ low Archipelago ~~and~~ ~~because~~ ~~of~~ ~~its~~ ~~low~~ ~~visibility~~ ~~and~~ ~~the~~ ~~menace~~ ~~of~~ ~~its~~ ~~atolls~~

That this was ^{on} Mr. Kellum's property.
~~To whom I wrote at once, regarding~~ ^{to his home in Medford}
~~it, and which~~ ^{these} he in turn he gave
 to me to take back to our division of
 of physical anthropology in ~~the~~ ^{the} Museum.
 Turia by the way has a very beautiful
 collection of local shells in rather
 extensive series, which Dr. excited
 Dr. Rehder's interest longer than we
 could spare the time for examination
 that it deserved.

~~Through Mr. Cowper we also became~~
~~acquainted with Mrs. Stephen Phillips~~
~~who had her three bonny daughters~~
~~of ~~the~~ ~~name~~ ~~shipshape~~ and~~

Once more, we were ready for
 further adventures afield ~~and~~
~~to Bora Bora this trip we~~
 On our way ~~stopped~~ ^{stopped} by the Phillips
 place ^{after lunch to have a look} ~~at~~ ^{very}
~~spot~~ ^{area} ~~at~~ ^{see} ~~at~~ ^{at} ~~luxuriant~~ reef
~~which~~ ^{inside} the Taapuna Pass ~~to the~~
~~lagoon about Tahiti.~~ We had ^{become} ~~met~~
^{acquainted} ~~with~~ ^{Stephen} Mrs. Phillips ~~and~~ her three young
~~daughters~~ ^{their good friend} ~~and~~ ~~Margaret~~ ~~Compton~~
 Margaret Titeomb of the Bishop

(24)
It had been unearthed by a native
gardener who quickly covered it up
again — bones or rather burials
were taboo, and not to be disturbed.

Nothing loath Dr. Rehdor and I hurried
out the very next morning by taxi.
~~In his spading of the garden he had~~
~~badly fractured the skull~~

with shovel, sieve, and carton, to
find that there was not only one
skull but two badly fractured by
the man's spade perhaps while re-
burying them. We sieved all the
soil and ~~got all but a~~ recovered
practically all the fragments, but
found ~~no~~ other bones, which sur-
prised us. ~~as this~~ We had hoped that
at least one complete skeleton ^{could} ~~would~~
~~be recovered~~ be turned up. It so
happened that the site was on ~~the~~
~~the~~ the property of Mr. Medford Kelly
of Moorea to whom I promptly wrote
for permission to take the find back
to the Smithsonian. His letter grant.

~~garden while the flower beds were
being spaded.~~

to get with in the (27)
relief by way of the
~~Teavani Pass~~
It was a relief to escape the buffets
of the Teavani Pass at 1:30.

Before us was the ~~Teavani~~ ~~Pass~~ ~~where~~
where ~~we were~~ ^{the P.O.} had asked to drop ^{a sack of}
asked to drop the mail. ^{mail}

~~wanting to get on with our work~~
~~we did not stop~~

This we did quite ~~or~~ without
touching the wharf, much to the
disappointment of the 'downs folk
who had assembled there to welcome
us. We did want to get down
to work without too much delay
and distraction. There is the
old saw of ~~getting~~ ^{jumping} out of the
srying pan into the fire. Such
was our fate. No sooner had
we tied up at the old, abandoned
Navy ~~at the~~ dock ~~attended~~
by the Navy

where there ^{was an} old
~~world war~~ ^{abandoned} Navy dock in
the next, ~~day~~ in the Bay beyond Teavani.

and as we thought Jensen people
than just ~~the~~ Via hope the part of ~~the~~
where the P.O. Masony school and
other buildings of consequence
and importance were located.

put
here Fry Pan with fire.