WHITNEY SOUTH SEA EXPEDITION

of

THE AMERICAN MUSEUM OF NATURAL HISTORY

Extracts from the Journal of

ERNEST G. MARTIN

Assistant Field Naturalist

Pack Till through Pack XVIII

March 16—September 22, 1921.

WHITNEY SOUTH SEA EXPEDITION

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THE AMERICAN MUSEUM OF NATURAL HISTORY

Extracts from the Journal of

ERNEST H. QUAYLE

Assistant Field Naturalist

Book XIII through Book XVIII

March 28--September 23, 1921.

WHITNEY SOUTH SEA EXPEDITION

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THE AMERICAN MUSEUM OF NATURAL HISTORY

Extracts from the Journal of

ROBERT H. QUAYLE

Assistant Field Naturalist

Book XIII through Book XVIII

March 28--September 25, 1921.

BOOK XIII.

Rimitara
Tubuai
Rapa
Vavitao (Ravaivai)

March 28--April 25, 1921.

Rimitara, Austral Islands.

March 28, 1921.

With the daylight this morning the little parakeet commenced flying about and squeaking. Four were obtained from one tree by calling. None have been heard since the firing. The warbler, white and noddy terns also present.

The natives of this village, with considerable tooting of horns, commenced on a tour of the island according to an old custom which they have tacked onto Easter Monday. No work is done on Good Friday, yet the people are mostly Protestant in declaration, but anything for a holiday with them!

Penetrated the bad-land jungle and found parakeets quite common but the foliage so dense that they were very difficult to locate. Obtained three more. Observed one cuckoo hopping about in the branches of a tree, but could not get a shot at him on account of sunlight in my eyes. Gygis terns very common above tree tops.

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rock in itself is rough enough. Add to that shattering and breaking, ridges, humps, gulches, crevasses, worse than the most broken lava fields imaginable and you have a faint inkling of what this region is like as far as the rocks are concerned. Then let ferns, vines, shrubs, and trees grow indiscriminately and thickly about and you can begin to imagine what it is like. Large leaves are strewn about the rocks to such an extent that one has to use considerable care in climbing about (for walking is impossible), to prevent slipping into crevasses or getting the legs badly bruised or even cut with the sharp edges of the rocks.

Another cuckoo scolded me with a long gutteral suck just now from the dense foliage overhead. Could not locate him until he had flown off. A few hundred meters an hour would be fast traveling here. A splendid natural preserve for birds if they once got here, and certainly for fruit-eating varieties a paradise. Why is the green dove not present? Ground birds should find safe refuge here from pigs, but perhaps it is too rocky for them.

The most numerous inhabitants of this inhospitable region are crabs and lizards, although rats are evidently present.

At last I have succeeded in crossing the bad-lands to the coast on the north side of the island. A twenty-foot uplift has converted that once picturesque bed of coral into a very maze of treacherous loose rocks and crevasses. I slipped into one when a rock rolled, but caught myself without injury. It would have been splendid to have canoed over it in ages past, but it is not pleasure to traverse it now. I mean it is not easy; the wildest places on earth are a pleasure to me.

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Two tatlers just came soaring against the heavy breeze. I did not recognize them at first and became quite excited about the possibilities of taking in a new bird. Will follow the beach around to second village and thence cut across the duck hills to the first one. Picked up two tatlers and a reef-heron along the shore. The beach is composed of very coarse coral pebbles or boulders.

About one kilometer along the beach I came to the graveyard of the second village. Some tombstones dated 1857, and one 1851. They are slabs of coral rock which appear to be made by using coral mortar and coral sand. The carved lettering on the older stones now stands out in relief, as the wind-blown sand from the beach eastward has worn away the face of the stone. Some of the lots are walled in. Only a few of the tombstones have any tendency towards adornment, and those few have a roughly modelled stone head at their top, perhaps an idol of their early religion. No crosses were evident.

The villagers were celebrating today; I heard their conch-shell horns soon after daylight. The younger folks were preparing for their ceremonial jaunt around the island as I arrived. The young men wore garlands of brilliant colors; some of the girls had one, or, at most, two flowers in their hair. Mr. and Mrs. Stokes were going to photograph the event. I resisted beckoning smiles and came on up the hill here, hoping for more ducks.

Below the tree where the guide first directed me I found an open place where tracks were quite thick and sign very prominent, showing that they do resort to the bare spots. A scare shot raised but two which went far off to the westward. Where are the rest? The boys' excuse yesterday was that rain the previous day might have attracted them to the taro beds. The terraced taro beds in all the

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valleys are certainly splendid conservators of whatever rain does fall upon the island.

Sooty and noddy terns flying about as usual. Warblers in most of the trees. On the hill where the three single ducks flushed yesterday I just now flushed one, but, after searching very carefully, I am unable to find a nest. Two small flocks of three and five flushed at the shot. Cloudy and squally.

Dropped into taro beds and picked up two more parakeets in neighboring breadfruit tree, half a dozen warblers and a tatler. The latter is responsible for most of the tracks throughout the patch. But natives insist that a red-eyed, red-legged, black bird (undoubtedly the rail) is there.

When I struck the beach this morning I feared the sea was too high for our boat to land, but they are loading copra in spite of the sea. We just ran the narrow passage with the breakers at least ten feet high on each side of us. It was rare sport.

March 29

A large flock of ducks, perhaps twenty, flew northward past the ship this morning,--about the size of the largest flock seen Saturday. I am going ashore this morning equipped to stay until the boat leaves the island, to camp on the marsh for rail.

While resting the second shoulder,--for I boldly essayed to carry my own load to the camp of Friday night,--the Old Man of the Taro Beds came along and offered to carry my burden for me. I gave him five francs for doing so. I don't believe it made his head ache to carry a heavy load. He just sold me a papi beating tool made of

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coral rock. I don't believe it belonged to him, but he swears it does while instructing me to hide it in my box. He has also agreed to get me a bunch of bananas for the ridge-pole of my jumped cabin. Some one has been here since I and has baited several rat traps with pieces of copra. There are a dozen here and I should at least catch a rat. As nearly as I can make out, this entire island is a sort of community, although there are a few of half-cast blood who possess plantations. Two or three curious little lizards have already inspected my box of junk.

At the beach I shot a reef-heron and sent it aboard with the first boat. The white terns in pairs, or occasionally threes, are at their daily play of soaring against the wind and hovering over the tree tops. Parakeets and warblers noted as usual. Ura means the parakeet, and means red, or the bird that produces the red feather.

To the next village with Plant Press for Mrs. J. C. G. Stokes. Parakeets common near there. Made one shot, much to the distress of nearby chickens.

After a short visit with the Stokes which augmented my equipment to the extent of a cyanide bottle and a three inch, graduated, hair-sighted compass, I proceeded to climb the hill up the trail always followed from Amaru. Came carefully over here to the tree which stands near the bare red spots where ducks were first observed. There sits one looking at me. All excited, now she rises. Bang! She drops. Four more rise shortly after her, and the other barrel brings down its duck. I reload quickly, but no more rise, so I search for my two victims. A flutter, and one hides deeper in the ferns but is easily found. Another flutter, and the other makes a

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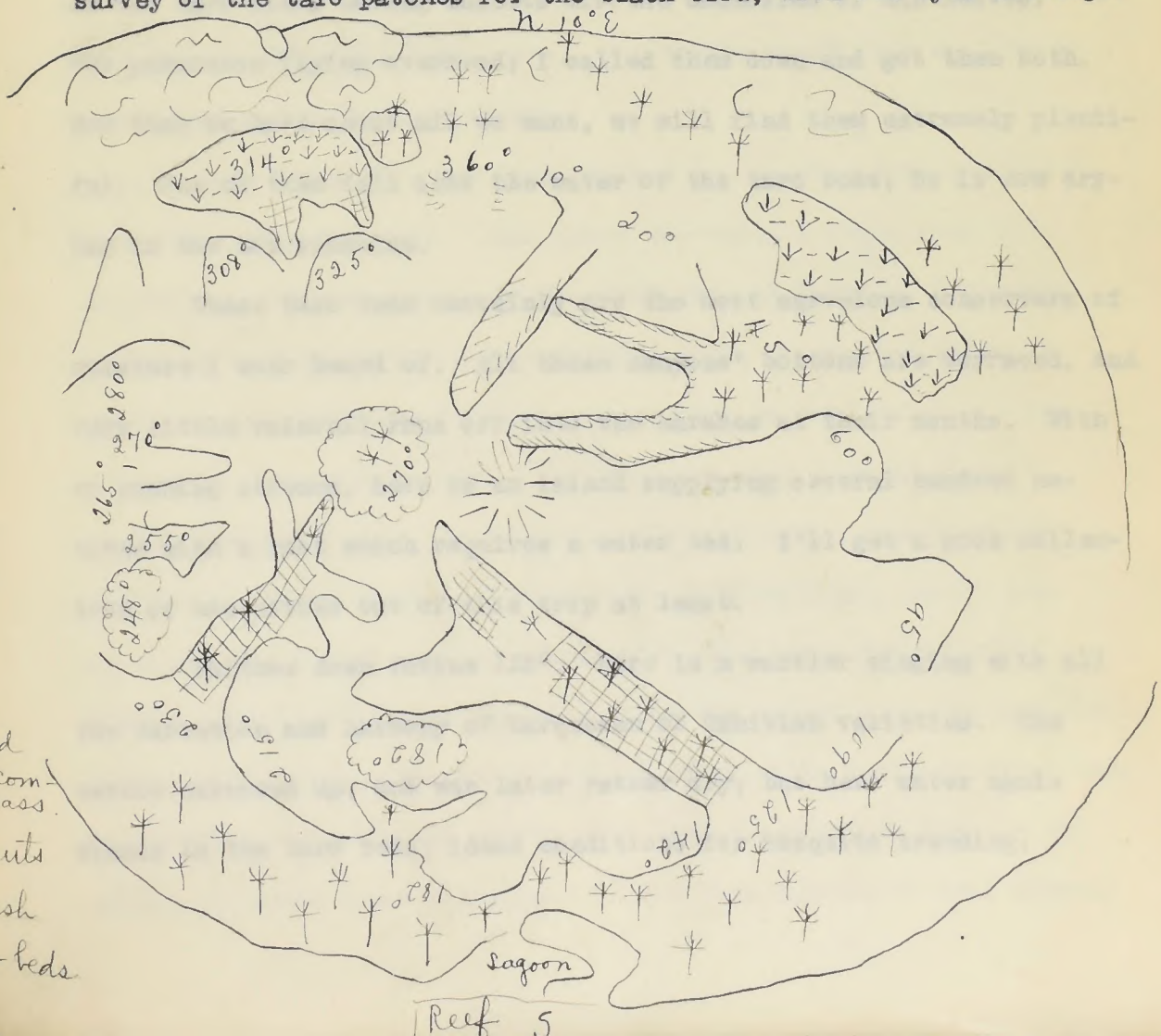
rush for larger, more dense cover. Now both are in my hands under pressure, dying to go to New York. As I write, a parakeet flies by from the direction of Amaru to the southwest, squeaking as it passes--a flash of color.

Uru, or Kuro, Mr. Stokes informs me, being derived from Uruura, meaning red, and applied often to the bird from which red feathers were obtained for ornamental head-dresses and other gear, has become the Polynesian word for the sacred feather work.

The duck is called Moora, with a heavy accent on the last syllable. I am going to make a rough sketch of the island from the summit of the central hill, so as to enable myself to make a thorough survey of the taro patches for the black bird, with red eyes and legs.



res dead
ning on com-
pass.
= coconuts
= marsh
= Taro beds

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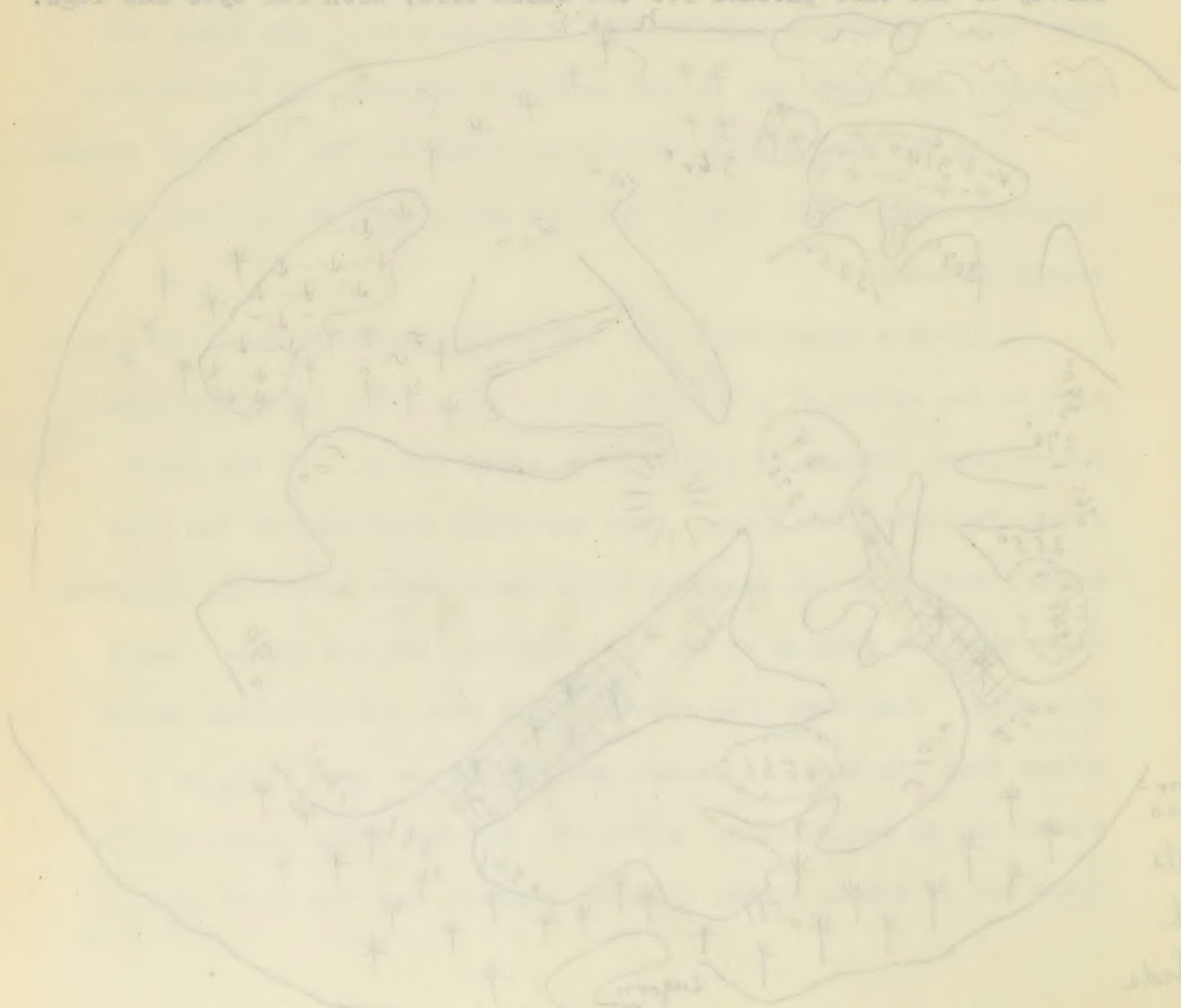

The sketch is on the center pages of this notebook. Finishing it, I commenced to systematically survey all the taro beds by going down one ravine and up the next all around the island.

Started down ravine 125°. Killed three noddy terns at head of it. They had been alighted in tops of coconuts, but at my approach got excited and flew about overhead croaking. Obtained two warblers showing considerable white feathers at head of ravine. Found a good ripe papiro and picked it. Lizards very prominent here, mostly the little blue-tailed, golden-striped one. Came to a taro bed with water in it, so sat down and ate the papiro (itau in Tahitian) but saw no signs of either Porzana or Porphyrio. The warblers flit about on the taro stems eating insects off the underside of the leaves. Two parakeets flying overhead; I called them down and got them both. Now that we have about all we want, we will find them extremely plentiful. One of them fell into the water of the taro beds; he is now drying in the hot sunshine.

These taro beds certainly are the most marvelous conservers of moisture I ever heard of. All these canyons' bottoms are terraced, and very little rainfall runs off into the marshes at their mouths. With no running streams, here is an island supplying several hundred natives with a root which requires a water bed. I'll get a good collection of mosquitoes out of this trip at least.

Farther down ravine 125°. Here is a warbler singing with all the variation and harmony of Marquesan or Tahitian varieties. The ravine narrowed up, and was later rather dry; but here water again stands in the taro beds, ideal conditions for mosquito breeding.

The sketch is on the center pages of this notebook. Finish-ing it, I commenced to systematically survey all the taro beds by going down one ravine and up the next all around the island.

Started down ravine 1BD9. Killed three moldy terns at head of it. They had been alighted in tops of cocoanuts, but at my approach got excited and flew about overhead croaking. Obtained two warblers showing considerable white feathers at head of ravine. Found a good ripe papiro and picked it. Lizards very prominent here, mostly the little blue-tailed, golden-striped one. Came to a taro bed with water in it, so sat down and ate the papiro (item in Tahitian) but saw no algae of either Coraena or Porphyrio. The warblers flit about on the taro stems eating insects off the undersides of the leaves. Two parakeets flying overhead; I called them down and got them both. Now that we have about all we want, we will find them extremely plenti-ful. One of them fell into the water of the taro beds; he is now dry-ing in the hot sunshine.

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There are at least two species of butterfly here, a black one with blue spots and a brownish one with yellow corners of the wings. Dragon-flies are very common, and of several species. One is very beautiful red colored. Wasps are not very numerous. Moths are quite plentiful and some are exceedingly beautiful.

Descended to road grade, thence reascended via ridge to SW leading to hill 182°, from whence I filled in sketch about the lagoon below that hill. A reef-heron just crossed over land from ravine mouth 125° over central hills.

4:00 P. M. Many parakeets squeaking in head gulches of ravine 230°.

Took trail down hill 208° and while hurrying along, a duck flew up and then fell down again. Got to the beach just in time to catch Beck before he went aboard.

Came to my hut, but side tracked to see what some natives were doing near the well. Just above the well, I found them as sketched on following page, grating the root of Maniota, a shrubby appearing bush which has a very bulbous root. I started to taste the root, but they went in hysterics to stop me from doing so, signifying by that ever readable sign language that I would choke. After grating the root, it is taken to a canoe-like trough filled with water, above which is a frame holding a straining sack. One man stirs the grated root as a housewife does bread dough, while another continues to pour the water from the trough over the material. In the bottom of the trough is a milky-white, fine sediment which they say is "drai maitai", the coarse pulp they are carrying home in the baskets of woven coconut leaves. I have seen baskets of this hanging

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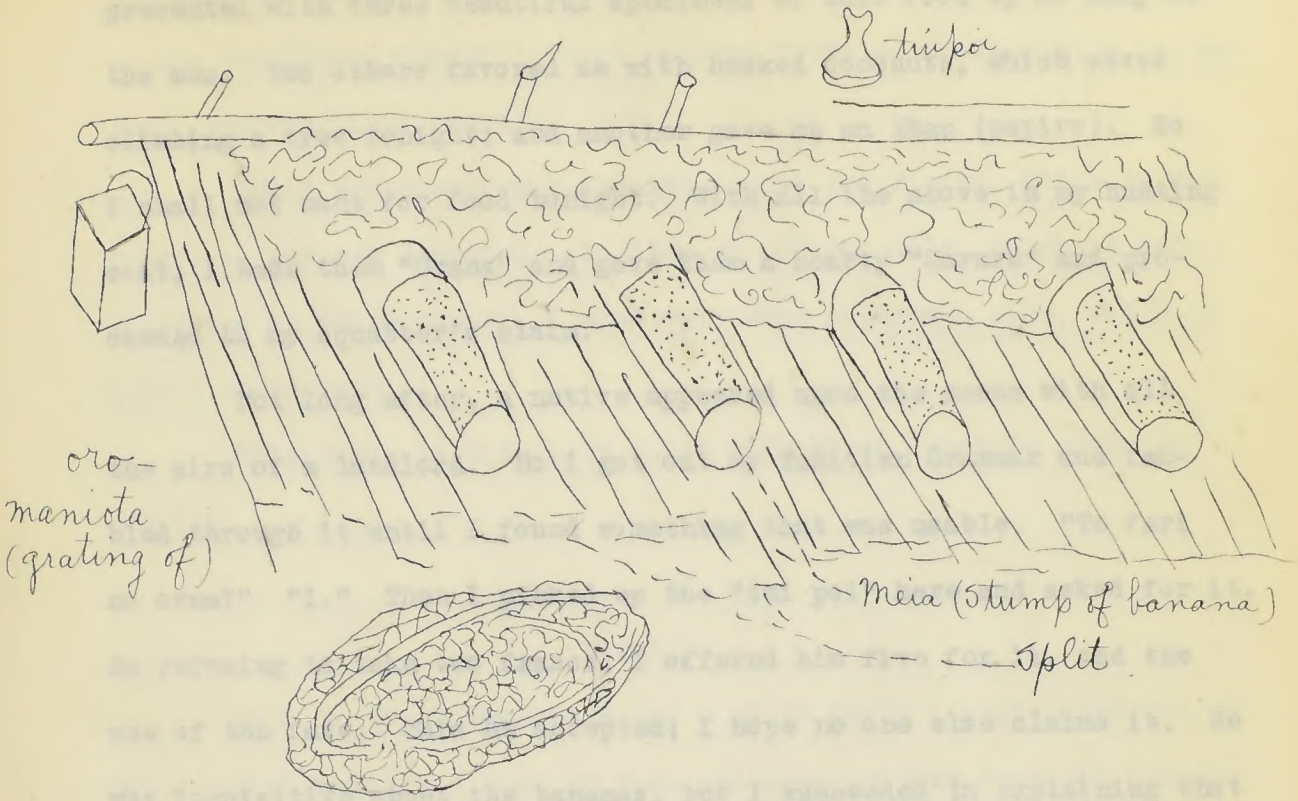
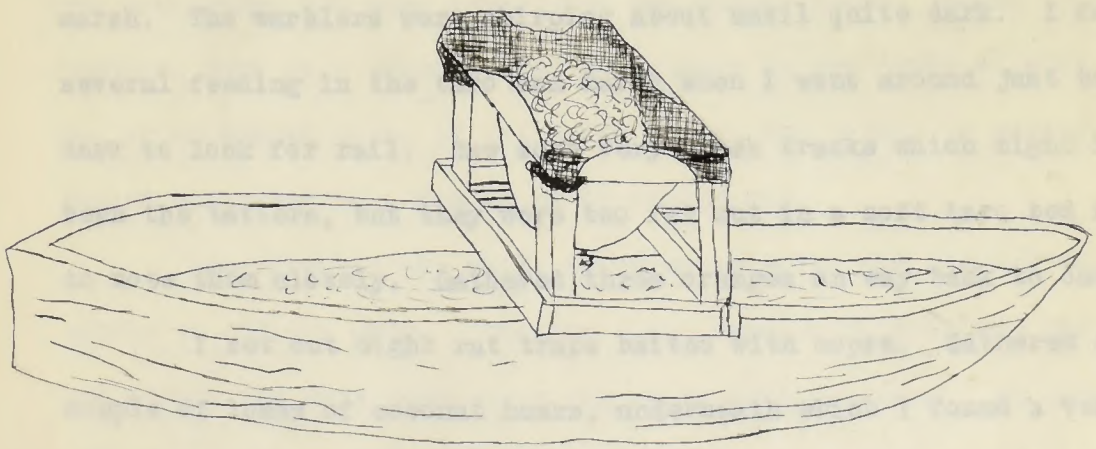
4:00 P. M. Many parakeets squeaking in head grabes of ravine 230°.

Took trail down hill 300° and while burrying along, a bank flew up and then fell down again. Got to the beach just in time to catch boat before he went aboard.

Came to my hut, but side tracked to see what some native were doing near the well. Just above the well, I found them as sketched on following page, grating the root of manioto, a shrubby appearing bush which has a very bulbous root. I started to taste the root, but they went in hysterics to stop me from doing so, sig-nifying by that over readable sign language that I would choke. After grating the root, it is taken to a canoe-like trough filled with water, above which is a frame holding a straining sack. One man stirs the grated root as a housewife does bread dough, while another continues to pour the water from the trough over the material. In the bottom of the trough is a milky-white, fine sediment which they say is "dead medicet". The coarse pulp they are carrying home in the baskets of woven cocoanut leaves. I have seen baskets of this bunch

about their houses, but have not observed them using it as food.





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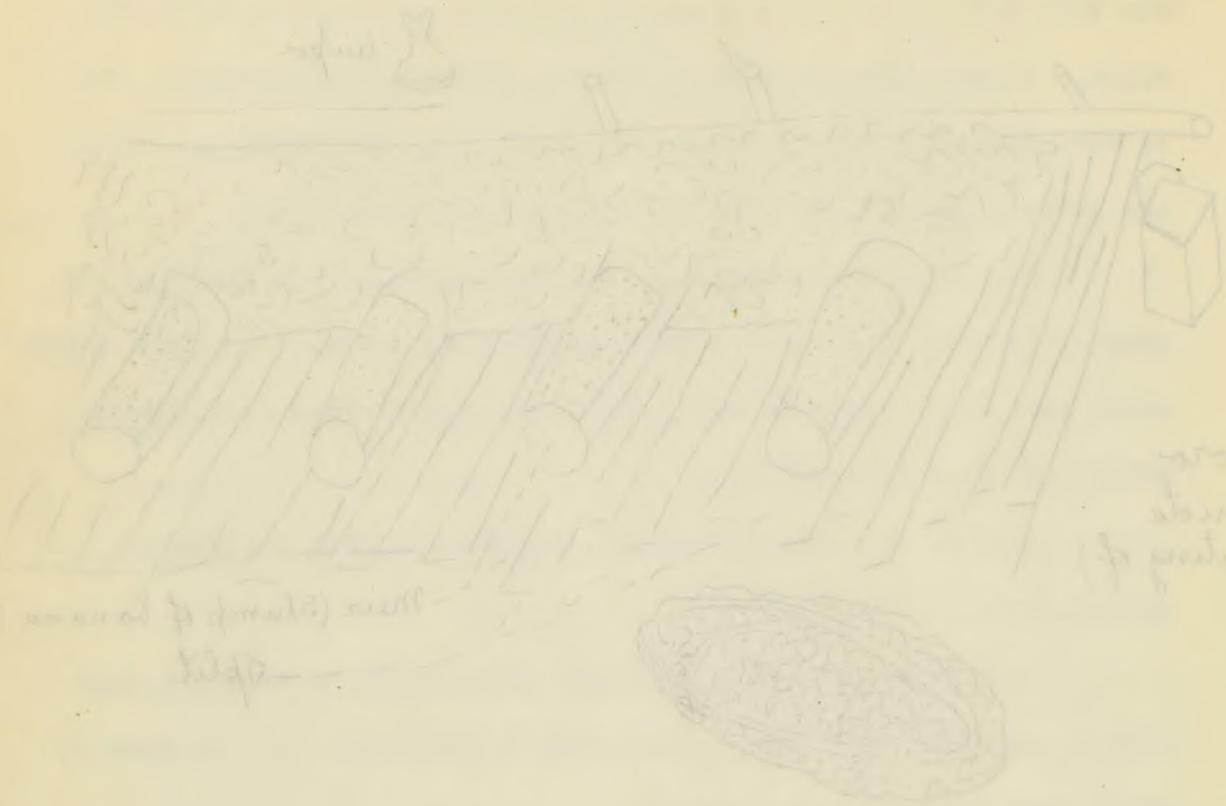

Having signified a desire for some breadfruit, I was soon presented with three beautiful specimens of that food by as many of the men. Two others favored me with husked coconuts, which saves climbing a tree tonight; and another gave me an Etau (papiro). So I shall not want for food tonight. With all the above in my hunting coat, I bade them "Urana" and gave them a hearty "Maruru" and proceeded to my squatter's claim.

Not long after, a native appeared upon the scene with all the airs of a landlord. So I got out my Tahitian Grammar and rambled through it until I found something that was usable. "Te fari no orna?" "I." Then I picked up the "tui poi" here and asked for it. He refusing to take two francs, I offered him five for it, and the use of the fare. This he accepted; I hope no one else claims it. He was inquisitive about the bananas, but I succeeded in explaining that I had bought them from the old man. When he left, he assured me my squatter's claim was maitai.

A reef-heron flew to a nearby tree, surveyed the situation, decided all was not well, and retreated to the opposite side of the marsh. The warblers were chirping about until quite dark. I found several feeding in the taro and marsh when I went around just before dark to look for rail. Saw some very fresh tracks which might have been the tatlers, but they were too far out in a soft taro bed for me to note them closely. Gathered three oranges on way back to camp.

I set out eight rat traps baited with copra. Gathered a couple of loads of cocomut husks, underneath which I found a very interesting species of landsnail, of which I collected about fifteen. I have seen strings of shells, beads made from the dyed shells. (I

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I set out eight rat traps baited with copra. Gathered a couple of loads of coconut husks, underneath which I found a very interesting species of lizard, of which I collected about fifteen. I have seen strings of shells, beads made from the dyed shells. (I

think the natives gather the bleached old shells and color them, but that is too much of a supposition to write down.) While staying in the "badlands jungle" I found various forms of small shells in the dirt,--unfossilized fossils.

Baked two breadfruit and the papiro for dinner, which is now ready. -- And now devoured. In lieu of coconut milk, which is most delicious on baked papiro, I used sweetened condensed milk, which is a good substitute.

This place is literally alive with black crickets chirping merrily.

March 30

2:00 A. M. I brought along a cloth which I perforated for my nose, and with which I kept my face and head covered from the attacks of "No No", the voracious mosquito of which I have collected a few specimens. Am gathering in the victims of my candle flame now, endeavoring to catch them before they get their wings scorched. A new fable should be written, not about the gaudy butterfly or picturesque moth, but concerning the poor insect and the candle flame. While upon candles, here is a helpful hint to campers in the lands of ants: a can of condensed milk, if the holes be not too large, is easily sealed ant-proof by a few drops of candle wax.

The crickets are still chirping noisily, and I'm off with a candle to collect some. Obtained three females with little effort, and caught two more females at the copra lying in camp. An earwig (?) and cock-roach are there awaiting next trip. A candle and a cyanide bottle will increase the collecting day about four hours. Just now,

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The crickets are still chirping noisily, and I'm off with a candle to collect some. Obtained three females with little effort, and caught two more females at the corps lying in camp. An earwig (?) and rock-roach are there awaiting next trip. A candle and a cyanide bottle will increase the collecting day about four hours. Just now,

for instance, I placed three insects into the bottle from the neighborhood of the candle. My collection of female mosquitoes should be particularly good, for they come around in considerable numbers wherever I am camped.

Obtained the earwig, but let the cock-roach escape. Earwig, cockroach, cricket and ants observed feeding upon copra. Spiders of three species, most too large for my cyanide bottle, observed about rubbish. This island is quite rich in moths, especially in the dry fern belt. Down here in the coconuts and swamp region they are not so evident. Save for this indomitable cricket and the roar of the surf pounding upon the reef, night noises are decidedly lacking here. Occasionally the rustle of dry leaves tells of the presence of rat, lizard, or cockroach.

3:00 A. M. Gygis terns clucking as if disturbed. Just before daylight, I heard duck-quacking twice. At daylight, I tried to find them, but could not locate them, nor find any signs of Red-eyes. Two reef-herons came over me and I fired at one of them, scoring a clean miss. Seven ducks raised from across the swamp, but in their circling failed to come near enough for a shot. The warblers commenced at daylight, chirping as they searched for food. Gygis terns were flying about at break of day. The parakeet was late in arriving, but eventually showed up. My landlord and another fellow came over while I was at breakfast. I gave them a can of sardines and they ate most of a breadfruit. They refused some very nice orange marmalade. Thunder in distance; light showers.

My string of rat traps produced nothing but ants and about twenty of the snails found last evening under bushes. They were

for instance, I placed three insects into the bottle from the neighborhood of the candle. My collection of female mosquitoes should be particularly good, for they come around in considerable numbers wherever I am camped.

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3:00 A. M. Gypsis terns clucking as if disturbed. Just before daylight, I heard duck-quacking twice. At daylight, I tried to find them, but could not locate them, nor find any signs of bad-eyes. Two reef-herons came over me and I fired at one of them, scoring a clean miss. Seven ducks raised from across the swamp, but in their circling failed to come near enough for a shot. The waterlets commenced at daylight, chirping as they searched for food. Gypsis terns were flying about at break of day. The parakeet was late in arriving, but eventually showed up. My landlord and another fellow came over while I was at breakfast. I gave them a can of sardines and they ate most of a breakfast. They returned some very nice orange marmalade. Thunder in distance; light showers.

My sifting of rat traps produced nothing but ants and about twenty of the small in found last evening under beams. They were

massed about the copra bait,from which I surmise that they, too, eat copra.

While putting on my shoes and leggings, three ducks came down above the swamp, circled once, and seemed to swerve when I "Quacked", coming well within range. I missed both barrels.

Proceeded up ravine above well. Got a light blue reef-heron which dropped over into ravine 270°, which had many taro beds under water. Flushed a tatler and reef-heron. Obtained two fairy terns with auxiliary. Along the road to eastward obtained two parakeets from top of high tree with ten shot. Flies very bothersome; bottled some. Rained enough to get grass and weeds well wet. Am now starting up canyon 230°. There are many noddy and gygis terns at its mouth, warblers and parakeets. By the actions of two butterflies just observed my two species may be but sexual differences. A fairy tern perched on a tree branch was obtained with but a slight drop of blood on the side of the head.

The trail led up hill 248° around the top of which I am searching for ducks. Having raised one with an ironwood tree in my road, I scored another miss. Over on hill 265° I flushed one and winged her, but she dropped at an angle below the brow of the hill, and so far I have been unable to locate her. She won't move, so I'll have to kick around for her some more. This appears to be my off day on ducks.

My duck remains too well hidden to find. I have eaten a lunch here hoping she would move. The parakeets are flying up and down ravine 270°. From above they appear decidedly yellowish green and may account for the yellow bird the natives claim is here.

massed about the copra belt,from which I surmise that they, too, eat copra.

While putting on my shoes and leggings, three ducks came down above the swamp, circled once, and seemed to swerve when I "quacked", coming well within range. I missed both barrels.

Proceeded up ravine above well. Got a light blue reef-heron which dropped over into ravine 270°, which had many tern beds under water. Flushed a tattler and reef-heron. Obtained two fairy terns with auxiliary. Along the road to southward obtained two parakeets from top of high tree with ten shot. Files very bothersome; bothered some. Rained enough to get green and weeds well wet. Am now starting up canyon 330°. There are many noddy and sooty terns at its mouth, wattlers and parakeets. By the actions of two butter-flies just observed my two species may be but sexual differences. A fairy tern perched on a tree branch was obtained with but a slight drop of blood on the side of the head.

The trail led up hill 248° around the top of which I am searching for ducks. Having raised one with an ironwood tree in my road, I scored another miss. Over on hill 235° I flushed one and winged her, but she dropped at an angle below the brow of the hill, and so far I have been unable to locate her. She won't move, so I'll have to kick around for her some more. This appears to be my off day on ducks.

My duck remains too well hidden to find. I have eaten a lunch here hoping she would move. The parakeets are flying up and down ravine 270°. From above they appear decidedly yellowish green and may account for the yellow bird the native claim is here.

Moho, a rail, red eye like fire, base of mouth red, legs and feet red, body black; very seldom seen and gone like a flash; heard in the swamp a sort of whimpering "Whoo-whoo-whoo". Formerly surrounded and caught by native hands.

Orovea, the cuckoo, Rimatara.

(Ita'ai), white tern. A'ai'ia.

Omamo, warbler.

Seeing a threatening squall to windward, I hastened across the hill tops, then descended ravine 450° which led me to Amaru, where I arrived just in time to get under shelter. Picked up two warblers with white feathers down ravine, but in spite of plentiful water in taro beds found nothing nor tracks even.

The above information concerning Moho was obtained through Mr. Stokes as an interpreter from an old native who seemed to know what he was talking about.

The ship failed to get around to this side of the island, so I then returned via the "Badland" camp of Sunday night, whither Mrs. Stokes went after land-shells and insects. There I obtained a cuckoo and three parakeets. Being informed that no boat was coming ashore this afternoon, I stopped at camp and skinned out the birds obtained early this morning. Stripped down to keep cool, rolled up in canvas, covered my head from mosquitoes, and slept soundly until daylight. Although I listened attentively before dropping off to sleep and upon awakening, I heard nothing of the rail.

Orovea is a bad bird because it eats the other birds' eggs and often two or three will fight it. No one has ever seen its

Boho, a rail, red eye like fire, beak of mouth red, legs and feet red, body black; very seldom seen and gone like a flash; heard in the swamp a sort of whimpering "Boho-wboo-wboo". Formerly surrounded and caught by native hands.

Grovea, the cuckoo, Minstere.

(Ite'ai), white tern. A'ai'ia.

Omano, warbler.

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Grovea is a bad bird because it eats the other birds' eggs and often two or three will fight it. No one has ever seen its

nest.

March 31

Proceeded through the swamp, and at seven-thirty headed for Amaru to see if I could find Mr. Beck or get birds aboard boat. Met Raoul who was going to Anaputu to order vessel around to other side of the island. He had met Mr. Beck going hunting, the boat having landed him at Anaputu. Mr. Stokes informed me that the boat did land here at Amaru yesterday at two o'clock, and that Mr. Beck was looking for me. The boat had actually come around here.

Just met Mr. Beck who is out camera hunting. He thinks the boat will not come around here. Saw a cuckoo crossing the marsh this morning. Warblers plentiful. Parakeets not infrequent.

The white feathered warblers, so an aged native informed us, are the old ones, which become more white as they get older. An old native told us the rats were destroying the parakeet by eating the eggs, and that they used to be a great deal more abundant than they are now.

Followed road beyond Amaru around to the village beside the lagoon. There penetrated coconut groves, exiting toward hills just before reaching another swamp. At the village I shot a white tern. Picked up several warblers along the road. A native has called me in to drink coconuts just after I have filled up on them. He has Beck's name in a note book. He gave me some mangoes and sent his cute little brown-haired daughter (about six years) after bananas.

These natives having invited me to eat, and I having

meet.

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Just met Mr. Beck who is out camera hunting. He thinks the boat will not come around here. Saw a toucan crossing the marsh this morning. Warblers plentiful. Parakeets not infrequent.

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These natives having invited me to eat, and I having

accepted the invitation, I had a few minutes of sleep before the meal was ready. I have just learned how the natives squeeze and strain their grated coconut into milk, using the fibre from the base of the leaves as a sieve. To make coffee they grind the bean very fine and merely pour the boiling water over it or through it in a sieve.

They have a good wholesome "suck" here, as in Tahiti. The remains are cast out of the open eating house, where dog, pigs and chickens make a scramble for every particle of refuse thrown away. Hermit crabs, a shell fish, two or three kinds of fish, and taro comprise the body of the meal. The coconut sauce being unfermented was not at all bad. The coffee with sugar and coconut cream was very good.

This man has four pigs, three staked by the front leg and strips of purau to the corner posts of a small shade-hut; the fourth having escaped from bondage is the deadly rival of the hound for the scraps from the banana leaf table. He also, like the chickens, helps himself to a drink of water from the same bucket I saw the people drink from. The coffee water I believe was taken from the bucket after I saw the pig steal his drink, but the coffee was strong enough to kill all other tastes. For guests they possess one table spoon. Bowls are the dishes and they use them for finger bowls after the meal is finished. The Vahine has a tremendous appetite, and is still "sucking" down fish and taro. Of course she had to take more time to eat the crab legs. I tried the shell-fish, but returned to straight fish and taro.

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They have a good wholesome "snack" here, as in Tahiti. The remains are cast out of the open eating house, where dog, pigs and chickens make a scramble for every particle of refuse thrown away. Hermit crabs, a small fish, two or three kinds of fish, and taro comprise the body of the meal. The coconut sauce being unfermented was not at all bad. The coffee with sugar and coconut cream was very good.

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They also possess four very light-colored young turkeys, which are surprisingly common here and at Rurutu. They seem to thrive well in this hot, dry climate. I prophesy that the best looking Vahine in Rimitara will live here ten years from now unless they move. This is about hill 215° along the road--but no! for we were but a kilometer or so from the village of Anaputu, whither we went after lunch.

"Jack" says the notice is his name, and well it should be, for he speaks good English. He hauled my stuff down to the boat for me and I came back with him to hunt rails here where he says they are to be found. In one hour I collected about ten white feathered warblers and four white terns. I shot a parakeet high in a tree, only winging him. Chased him through a patch of lemon shrubs, and now have him alive in a bag, hoping he will live for some time in captivity.

Sent everything aboard this evening, including some puitoe and stone adzes that the natives sold me for a few francs. Then came and searched "Jack's" swamp for the rail. Found some very suspicious tracks but it was too dark to make them out. Perhaps this is not as good a place as the one near the other village, which I suppose I should visit about daylight in the morning.

Took a bath and dressed down to a newly purchased pario for my native evening. I got to sketching to explain my conversation, and then got myself a peck of trouble by sketching a profile of one of the boys sitting near me. It happened to look like him, much to my surprise and his delight. The consequence was that I had to sketch the eight people here, and they didn't all turn out

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Took a bath and dressed down to a newly purchased panto for my native evening. I got to sketching to explain my conversation, and then got myself a peck of trouble by sketching a profile of one of the boys sitting near me. It happened to look like him, much to my surprise and his delight. The consequence was that I had to sketch the eight people here, and they didn't all turn out

so successfully. My yodel also got me in for an evening of singing American songs to them. How little people know, when my drawing and my singing--if it can be called that--amuses them! They are splendid hosts, and I certainly am glad to spend the night in such a hospitable place. We are due to sail tomorrow at nine o'clock in the morning. Hate to leave without Moho.

April 1

I hope Meho fools me and comes out of the reeds, for in a light shirt and pario I have come to the swampy rice beds near Maturu, or whichever village is on the east side of the island. It is not yet five o'clock, but there is moonlight enough with less than the last quarter to sort of write. Mosquitoes are most obligingly scarce. Perhaps it is a bit too windy for them. A rank, sour odor comes from the reed bed. As I came along the road, noddy and fairy terns were heard.

5:30. Just well daylight. Here and there a warbler pipes out one note. A parakeet squeaks above the trees bordering the swamp. Two wandering tatlers fly over me, hover about this open, mucky portion of the rice field, give me the once over, and depart. Two more parakeets squeak as they cross the swamp above me. A new note comes from the reeds, yet it is within the range of the possibilities of the warbler. Alas, it is but he! The crickets have now ceased their all-night concert. Some other insect has a sharp, light, clicky buzz which has continued for some time. The dragonflies were early on the job. I could see them when I first came, hovering above the muck. But oh! to hear that whimpering noise

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April 1

I hope Kobo fools me and comes out of the reeds, for in a light skiff and parlo I have come to the swampy rice beds near Maturu, or whichever village is on the east side of the island. It is not yet five o'clock, but there is moonlight enough with less than the last quarter to sort of write. Mosquitoes are most obligingly scarce. Perhaps it is a bit too windy for them. A rank, sour odor comes from the reed bed. As I came along the road, noddy and fairy terns were heard.

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that Moho is reported to make!

I change my location to a point commanding the entrance to the reeds. A tatler drops into the rice bed. A reef-heron alights on the opposite bank. I planned to remain here only until six o'clock, and to stop for five or ten minutes at the taro patch where Mr. Beck saw a rat or something. The reef-heron and tatler departed when I shifted my position a little. The reef-heron has returned to an observation post beyond the second rice bed. There, perched upon a sloping tree trunk, he is looking over the situation. I hadn't heard the tatler's return, and seeing a bird wading I became quite excited with hope and anticipation in spite of his light appearance. The dragonflies become quite plentiful, but I have only observed two species.

Demiegretta having decided that I was perfectly harmless, has again alighted upon the opposite bank; but, still a trifle doubtful as to the safety of his position, he remains upon the bank eyeing me with suspicion. The tatler very carefully wades about not very distant from me, picking up a delicious breakfast no doubt from the mire of the rice bed.

The church bells are ringing for six o'clock mass. Come on, Moho,--now or never! Never! unless it be next time, for there was not a sign of anything rail-like when I waded through the rice beds, Mr. Beck's taro patches, and just now Jack's swamp. Warblers are thick enough, but that is about all. There are little fears of its being exterminated here for years to come. But I am inclined to think Moho is getting rather scarce.

that Bobo is reported to make!

I change my location to a point commanding the entrance to the reeds. A tattler drops into the rice bed. A reef-heron alights on the opposite bank. I planned to remain here only until six o'clock, and to stop for five or ten minutes at the taro patch where Mr. Beck saw a rat or something. The reef-heron and tattler departed when I shifted my position a little. The reef-heron has returned to an observation post beyond the second rice bed. There, perched upon a sloping tree trunk, he is looking over the situation. I hadn't heard the tattler's return, and seeing a bird wading I became quite excited with hope and anticipation in spite of his light appearance. The dragonflies become quite plentiful, but I have only observed two species.

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The church bells are ringing for six o'clock mass. Come on, Bobo,--now or never! Never! unless it be next time, for there was not a sign of anything rail-like when I waded through the rice beds, Mr. Beck's taro patches, and just now Jack's swamp. Warblers are thick enough, but that is about all. There are little fears of its being exterminated here for years to come. But I am inclined to think Bobo is getting rather scarce.

Jack fed me very luxuriantly upon chicken fricasseed in coconut sauce, and very delicious with taro, coffee, coconut cream, and biscuits opened in honor of their distinguished visitor. As for eating with the fingers when it came to chicken, these natives could not teach me anything. The coffee too, much as I dislike the stuff, is passably drinkable with plenty of coconut cream.

The clothes I washed last evening, which was the grand occasion of the pario, were well dried this morning when I finished the hunting. Jack is going to try to capture some Moho against the possibility of our returning later. The natives have a method of rolling a self-dried leaf in the mat-making leaf and smoking it in lieu of tobacco. I wonder if it is an old habit indigenous or adopted.

Raoul just passed and informed me that the ship would leave some time between nine and twelve. Returning along the road this morning between six and seven, I observed noddy and fairy terns in considerable numbers above the road. The warblers were everywhere, and several pairs of parakeets were about. Two of the latter I observed eating at the blossoms of the maupi-nut tree. One of them I collected for a stomach inspection to aid in deciding what to offer his Royal Nibs, Uru Rimatara,to eat. He is alive and savage enough this morning, giving me some very severe bites.

Down at the beach. (Here is a sample of Jack's handwriting.) Vol. 13 p. 154

Went aboard at nine o'clock, but found Mr. Beck wanted some birds, so returned to hunt one hour or so. Followed a cuckoo for half an hour, but it was always just beyond range or else too close. They are curious but wary once they see a person. Went to old haunts of Purau trees beside taro patches, and obtained ten warblers;

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one is so lively that I am going to try keeping him in a cage. Here we are all ready for the last load and the boat laying to about a mile out! Suppose they are eating breakfast instead of getting started, the result being an hour or two of wasted time. But time is as important to natives as it is to hogs, but they might consider us slaves of civilization and let us work as much as possible.

Went into woods behind bluff just north of the beach and called a cuckoo too close for shooting and could not get another sight of him after he flew.

Came aboard on first boat after one o'clock. Stokes reeled off two hundred feet of film as the boat came in, and as we went out I fluttered a turkey overhead, which should show up a bit. On board we skinned out the birds before the rest of the cabin passengers arrived. We did not get the boat aboard until five o'clock, when we commenced our tacking against a head wind. White terns alone noted. Once today, while hunting, I heard a tropic-bird which sounded like the red-tailed species.

April 2

Land was still in sight this morning, for we are tacking against a head wind, and a strong current. We have to sail one hundred miles to travel eighteen on the map, and since we sail but seventy-five or so a day, it will require about eleven days to reach Tubuai.

Several shearwaters were observed today, but, as I am unable to identify them on my own knowledge, I have no authority for even mentioning their names as given by Mr. Beck. One tropic-bird was

one is so lively that I am going to try keeping him in a cage.

Here we are all ready for the last load and the boat laying to about a mile out! Suppose they are acting ornamental instead of getting started, the result being an hour or two of wasted time. But time is as important to natives as it is to dogs, but they might consider us slaves of civilization and let us work as soon as possible.

Went into woods behind Bluff, just north of the beach and called a cuckoo too close for shooting and could not get another sight of him after he flew.

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Several observators were observed today, but, as I am unable to identify them on my own knowledge, I have no authority for even mentioning their names as given by Mr. Beck. One tropic-bird was

observed by the Captain but we did not get to see it. The chief objects of interest in the bird line are my captives, a parakeet and a warbler, for which I built a box cage which rests on the life boat astern--the catchall for cabin junk. The parakeet seems to take his captivity very calmly, showing a bit of shyness but not excitement. The warbler, on the other hand, selected the largest grating and continued to dash madly at it until I closed it up so he could not get his head out. He refused to eat cockroaches and ants. Mr. Beck says he ate some banana but I did not see him doing so. He also refused the remains of two caterpillars donated by Mrs. Stokes after the ants had slaughtered them.

The parakeet, so natives informed Raoul, lives upon the nectar of tree blossoms, which my observation of Friday morning and the juicy constituents of crops and stomachs would verify. I placed some banana in the cage with the hopes that he would like it and he ate quite a quantity, whereupon I wagered that he would live one month.

April 3

Spent yesterday morning stringing labels and studying the Tahitian language. This morning I found the warbler dead in his cage. A post-mortem revealed the fact that at least two shot had penetrated his abdomen, so the coroner's inquest reported "Death due to internal injuries". Made up his skin, number 887. Spent morning studying Tahitian and reading papers.

Two scorpions were found on the ship today, one of which I got inside the cyanide bottle. There was a little talk as to

observed by the Captain but we did not get to see it. The other objects of interest in the bird line are my captives, a parakeet and a warbler, for which I built a box cage which rests on the life boat antenna--the catchall for cabin junk. The parakeet seems to take his captivity very calmly, showing a bit of sullenness but not excitement. The warbler, on the other hand, selected the largest crating and continued to dash madly at it until I closed it up so he could not get his head out. He refused to eat cockroaches and ants. Mr. Hook says he ate some bananas but I did not see him doing so. We also rescued the remains of two caterpillars donated by Mrs. Stokes after the ants had slaughtered them.

The parakeet, as natives informed Hazel, lives upon the nectar of tree blossoms, which my observation of Friday morning and the juicy constituents of crops and stomachs would verify. I placed some bananas in the cage with the hopes that he would like it and he ate quite a quantity, whereupon I regretted that he would live one month.

April 5

Spent yesterday morning stripping labels and studying the Tahitian language. This morning I found the warbler dead in his cage. A post-mortem revealed the fact that at least two shot had penetrated his abdomen, so the coroner's inquest reported "Death due to internal injuries". Made up his skin, number 807. Spent morning studying Tahitian and reading papers.

Two mosquitoes were found on the ship today, one of which I put inside the cyanide bottle. There was a little talk as to

whether or not a specimen taken aboard ship was worth preserving. A scientific specimen is always valuable if properly labeled. It is just as important to know that Mus norvegicus is the rat in the hold of a schooner as it is that a new species of rat lives in Rapa. It is only by specimens that evidence is secured regarding life habits of migration and dispersion of species. We may presume that scorpions are transported on ships, we may suspect that cockroaches and ants and rats are so carried about; but we only know that such things are as they are when specimens are examined from various localities, ships, and seaports.

Light showers today. One tropic-bird (P. rubricaudus) observed just after noon. The parakeet just gave a squeak; I hope he will live awhile at least. Went up and discovered that he had eaten a good portion of a piece of canned peach I placed between the cage bars. Mr. Beck put some coconut there.

April 4

About sunrise this morning, four white gygis terns were observed. The parakeet nibbled some soft coconut meat, and also ate some orange today. We keep fresh banana for him all the time. He is squeaking more frequently now and looks well and healthy.

Spent morning on Tahitian grammar. Mr. Beck unwrapped the few specimens I made up and showed me my errors this morning, mostly long necks, twisted heads and tails. The latter was caused by wrapping and not straightening out at finish.

We are sailing slowly but almost directly towards Tubuai; it should hardly take more than a week to make the trip. Raoul

whether or not a specimen taken aboard ship was worth preserving. A scientific question is always valuable if properly labeled. It is just as important to know that the parrot is the rat in the hold of a schooner as it is that a new species of rat lives in Spain. It is only by specimens that evidence is secured regarding life habits of migration and dispersion of species. We may presume that scorpions are transported on ships, we may suspect that cockroaches and ants and rats are so carried about; but we only know that such things are as they are when specimens are examined from various localities, ships, and seaports.

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April 4

About sunrise this morning, four white egrets were observed. The parakeet nibbled some soft coconut meat, and also ate some orange today. We keep fresh banana for him all the time. He is squeaking more frequently now and looks well and healthy.

Spent morning on Tahitian grammar. Mr. Beck unwrapped the few specimens I made up and showed me by errors this morning, mostly long words, twisted beads and tails. The latter was caused by wrapping and not straightening out at finish.

We are sailing slowly but almost directly towards Tuamotu; it should hardly take more than a week to make the trip. Tuamotu

thinks we will see land tomorrow, but I have my doubts.

April 5

Land was in sight this morning at daylight bearing NNE x E, which we have made our course this morning by the use of the engine and the grace of God in a northerly wind. A shearwater was observed early but nothing since. My parakeet is still alive but acting queerly this morning, picking at everything as if irritated, and I don't like the appearance of feathers in his cage. We have had very fair weather and a nice sea these five days. White tern passed about eight o'clock. Just before nine A. M. Mr. Beck shot an immature red-tailed tropic-bird, in which the longest tail feather, some five inches in length, is white, making us think it was a red-bill. The ship made two circles before it was picked up. Birds are noticeably scarce for the near proximity of land.

Tubuai has a little historical record that is interesting. Discovered by that inveterate explorer Cook in 1777, it came later into notice when it gladdened the sight of the Missionary passengers of the "Duff" in 1797. In the meantime, however, the famous mutineers of the "Bounty" had landed there and subsequently quarreled with the natives and had been forced to depart for safety. This was in 1789. The chronicler of missionary research, William Ellis, records stopping outside the reef. The bravest of missionaries, Mr. Nott, came here in 1822 with native Tahitians to help spread the Gospel.

9:30 A. M. A young red-legged booby and a white tern were astern. The super cargo says traffic is very irregular from these

think we will see land tomorrow, but I have my doubts.

April 3

Land was in sight this morning at daylight bearing NNE x E, which we have made our course this morning by the use of the engine and the grace of God in a northerly wind. A snowwater was observed early but nothing since. My parakeet is still alive but acting queerly this morning, plucking at everything as if irritated, and I don't like the appearance of feathers in his cage. We have had very fair weather and a nice sea these five days. Watch torn passed about eight o'clock. Just before nine A. M. Mr. Beck shot an immature red-tailed tropic-bird, in which the longest tail feather, some five inches in length, is white, making us think it was a red-bill. The ship made two circles before it was picked up. Birds are noticeably scarce for the near proximity of land.

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9:00 A. M. A young red-legged booby and a white tern were astern. The upper cargo says traffic is very irregular from these

islands. There is one local schooner at Rurutu which occasionally makes trips to Papeete. Raoul says that whenever a firm gets the idea there is cargo down here they send a ship to see about it.

10:00 A. M. A considerable flock of birds is fishing a little off our starboard. It is composed mostly of terns, white and noddy, but with boobies and frigate-birds about.

When the boat went ashore for a pilot I went with it. Two natives conducted me to the taro beds nearly northeast of the island. There I found tatlers plentiful and collected three. Flushed a duck but missed him. Myna greeted us at the village. They are quite numerous. Followed road around to port at which boat anchored. Picked up a reef-heron. Came into brush behind village. Obtained one of two cuckoos seen at different times. Flushed three "Moa aviri", jungle fowl (?), but they took to tree tops and thence departed in different directions. We are now trying to locate them in the hibiscus shrubbery.

Came across nothing with further search, nor on the return trip to ship. Mr. Beck found nothing uncommon, so had no birds to skin tonight, going ashore. I skinned out two tatlers, the heron, and the cuckoo, with considerable trouble making the feathers come true.

April 6

Rather late getting started this morning. Mr. Beck is going out to the islands on the reef after possible shearwaters. The swamps, brush and mountains for mine!

Proceeded to the village of Matanura along with our dis-

islands. There is one local adventurer at Santuna which occasionally makes trips to Tapeete. Mount says that whenever a fire gets the idea there is cargo down here they send a ship to see about it.

10:00 A. M. A considerable flock of birds is flushing a little off our starboard. It is composed mostly of terns, white and sooty, but with boobies and frigate-birds about.

When the boat went ashore for a pilot I went with it. Two natives conducted me to the taro beds nearly northeast of the island. There I found twelve plentiful and collected three. Flushed a duck but missed him. Kyra greeted us at the village. They are quite numerous. Followed road around to port at which boat anchored. Picked up a reef-heron. Came into brush behind village. Obtained one of two cuckoos seen at different times. Flushed three "Sea swift", Turgis fowl (?), but they took to tree tops and thence departed in different directions. We are now trying to locate them in the ridiculous scrubbery.

Came across nothing with further search, nor on the return trip to ship. Mr. Beck found nothing unusual, so had no birds to mix tonight, going ashore. I skinned out two twelves, the heron, and the cuckoo, with considerable trouble making the feathers come true.

April 6

Rather late getting started this morning. Mr. Beck is going out to the islands on the reef after possible shearwaters. The swamps, brush and mountains for mine!

Proceeded to the village of Matauna along with our dis-

charged gendarme. Then struck out to hunt the taro beds. A native who can speak tolerable English adopted me and conducted me to the best place for ducks. Came across Aitkins and the Stokes. Aitkins is laid up, having just recovered from a fever. He told me that in the evenings all manner of ducks could be obtained within a quarter of a mile of the house he lived in.

The native took me out two hundred yards and there foolishly clapped his hands flushing out of range at least fifteen ducks. Two delinquents, however, later fell victims to our gun, but one was only winged and escaped in the rank tall grass of the marsh, which was so high that I could just see the native's head as he went through it. He said that he formerly saw the Moho, but this time no. He is a native of the Cook Islands. They told Raoul last night that Moho (the rail) could be caught during a rainstorm when they came out of the dense grasses in which they live. We have left the handsome offer of twenty francs for any they capture against our return from Rapa.

The groves of trees or shrubs running up the ravines towards the summit are the Purau (hibiscus). Thither we have come to hunt Moa aviri, the jungle fowl, or at least wild chicken. Ascending this ravine to an elevation of six hundred feet, we flushed three or four fowl. This mountain, he tells me, is Aratupa (?). Not the mountain but the rouge-red peak below.

While silent hunting and chewing wild sugar cane for refreshments, we heard some fowl fly above us. Later, at times when we broke an unusually noisy stick in our path, the birds flushed from the tree tops over head and flew off down hill. The foliage was so

charged gendarme. Then struck out to hunt the two beds. A native who can speak tolerable English adopted me and conducted me to the best place for ducks. Came across Aitkins and the Stokes. Aitkins is laid up, having just recovered from a fever. He told me that in the evening all manner of ducks could be obtained within a quarter or a mile of the house he lived in.

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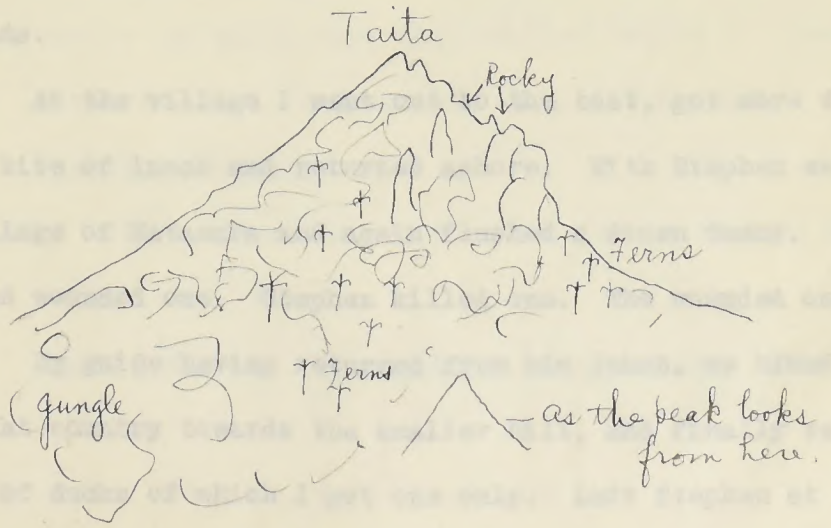
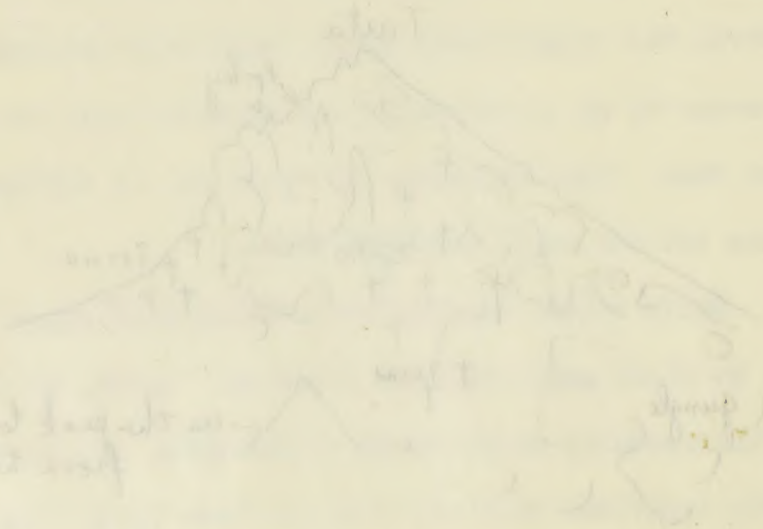
While silent hunting and chewing wild sugar cane for refresh-ments, we heard some fowl fly above us. Later, at times when we broke an unusually noisy stick in our path, the birds flushed from the tree tops over head and flew off down hill. The foliage was so

thick at all times that not even a glimpse of them was obtained. They feed, according to the natives, mostly in the evenings and early mornings, remaining in the tree tops during the day time. He says they lay their eggs in August. The ducks, he says, lay in May and June. Like at Rimitara, they take to the hills here in the day time, going down to the taro beds in the evening and remaining until disturbed next morning, or until about eight or nine o'clock. This native also informs me that he never heard of anyone ever finding or seeing the cuckoo's nest or eggs.

Here at an elevation of 850 feet was a wandering tatler perched upon a lava boulder amidst a barren red-soiled, washed-out knoll. On the slope of the peak ahead of us the tree ferns commence to feature the landscape. There is a dense grove of jungle on the east slope of the peak down through which we plan to descend after a climb amongst the rocks and jungle above. No birds noticeable from here. The guide tells me that Tauvai (tropic-birds) nest out on the rocky peak at the other end of the island where there are caves.





Noio--black back, white below, white on head, web-footed, wing about eight to ten inches (from native), bill black.

The trail to the summit is up the opposite ridge. Here we found traveling utterly impractical, and as there appeared to be no bird life, I did not strive overly hard to penetrate the jungle-covered jumble of boulders. Descended through similar territory searching for ground doves or whatever might be present without a sign of anything until we got quite low, where I succeeded in calling two cuckoos into the tree tops above me. One spied me, but I got him with a ten as he hopped away. The other came close enough to fall with the auxiliary, shot in the head. Just outside the jungle near a taro bed, I stumbled over a chicken in the grass, and then let her get into the trees by flight, missing her cleanly at a few yards. Had auxiliary in other hand so only got one chance. She was quite a bit lighter in color than the Tahitian bird, showing considerable redness.

We finally found our way down out of the place we got into, but found no birds. Had a delicious drink or two where we knew the water was pure, to a certain extent. Had a good big coconut at the lowlands.

At the village I went out to the boat, got more duck shells, ate a bite of lunch and returned ashore. With Stephen we hiked up to village of Matanura and again flushed a dozen ducks. I killed one and wounded one. Stephen killed one. The wounded one escaped.

My guide having returned from his lunch, we hiked far across the flat country towards the smaller hill, and finally raised another bunch of ducks of which I got one only. Left Stephen at the first

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My guide having returned from his lunch, we hiked far across the flat country towards the smaller hill, and finally raised another bunch of ducks of which I got one only. Left Stephen at the first

place and have heard him shoot at least once.

The ducks returned, once directly overhead but rather high up. I shot at them, but my victim flew several hundred yards before falling, and it is impossible to say whereabouts. Heard several cuckoos along the trails and could easily enough have killed one right near the first bunch of ducks, but couldn't summon enough courage to make the sacrifice. One just flew by, and another is calling not far away. Instead of waiting here for the ducks to come back, I'm going after him.

White terns are about. The Myna is already altogether too plentiful. It is but a matter of a few years when this island will be like Papeete, overstocked with them.

Birds.

From Robert T. Aitkins' Notebook.

a'aia equals tern (?)--white--called in Tahiti and Pomatus itata'e.

Gygis alba.

tava'e equals tropic-bird (red-tailed).

Phaethon rubricaudus.

ma'uroa equals (my guide says white-tailed tropic.) Black (?), dives for fish, larger than tern, lives mau'a.

Phaethon lepturus.

oio equals noddy. Black, dives for fish (white spot in forehead), larger than tern.

Anous stolidus. (Megalopterus melanogenys). Lesser also present.

No native name for myna, merle in French.

Acridotheres tristes (?)

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Sterna alba.

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Phaeton rubricauda.

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dives for fish, larger than tern, live man's.

Phaeton lepturus.

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Anous stolidus. (Megalopterum melanogenys). Lesser also present.

No native name for kyra, morie in French.

Aerodromus tristes (?)

otaha equals frigate-bird. Black, white-breasted, , red-breasted, dives for fish, lives in the little motu.

Fregata "aquila".

o'oroveo is the cuckoo. Small bird, brown, mottled with white.

Urodynamis t. taiensis.

upoa is the shearwater. Black, has cry like small baby cries, crys only at night, lives only on the motus on reef.

(?) Shearwater Puffinus or Pterodroma (?).

moora oviri (toevao) is wild duck.

"Anas superciliosa".

torea (i'ivi, name preferred in Tubuai). Small bird, runs on beach.

Heteroscelus incanus.

otu'u is the reef-heron. Large bird, found on beach, reef and swamp.

Demigretta s. sacra.

moho--size of the merle, lives in the swamp.

Porzana sp.(?), probably atra.

I dropped in at Aitkins for a visit after dark, and during the evening copied the above from his notebook. He has been confined to bed for a month with a strange illness that has left a hard lump below his lungs on one side. He says this list of birds is the complete extent of native knowledge and that upon several occasions he has endeavored to augment it with further information, but it seems to comprise all the birds they know.

Had a bowl of tea and some bread. We retired early to let him rest, walking up to the village of Matanura where the natives were gathered together in song. Stokes and I went over and took it in. There were too many women for good singing. The men have

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Porphyrornis z. tahaensis.

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only at night, lives only on the motus on reef.

(?) Kingfisher Halcyon or Pteroptoma (?).

moora ovira (tarano) is wild duck.

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some really good deep tones, the older women no music to speak of but lots of leading energy, the girls too shrill and high-pitched.

April 7

Awoke at five and came back to this wealth of ducks about Aitkins' lodgings. Not yet light enough for shooting so I have lighted my candle, which I always carry lately, and am making these notes. Three or four ducks have passed on whistling wings. Some have "quacked" over towards the main pool. One at least just flushed with considerable "quacking" from the taro beds between here and the house. Mosquitoes are quite abundant. Chickens are crowing from farms and hillside. White terns heard a while ago. More ducks quacking. One flushed from the bed closest to me. What an interesting thing this waiting is! Seventeen just flew overhead, and I'm going to try now to sneak upon them for a "pot" shot.

My guide says that in May there are plenty of O'orovea, the cuckoo. My pot shot proved my undoing. I went in too early to see well, and consequently failed to hit my birds hard enough. Winged two but could not find them in the rank weeds. My guide was waiting for me and we hiked out to the other grounds, where I got one sitting shot but no line-up. The wing shot fell again in a heavy grass (I think dead), but it was impossible to find her. We traversed a grass swamp, westward from the trail, and flushed a pair, one of which I got. Another pair waited until we had passed beyond gun shot and then rose from within a few yards of our trail. Heard the cuckoo but did not get to see one.

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There were no ducks at the first pond when I returned there prior to eight o'clock at the dock, where we have been waiting for at least three good hours with no ship in sight yet. Raoul has arrived with a goat, a large pig, and a small one. If we delay much longer we may fare better at table, the Captain's table at least. Ours generally suffers one or two dishes. One is inclined to pull up at the second table. Once the difference was canned beef and fresh chicken; another time it was sardines and fresh flying fish plus asparagus; nearly always the taro is left off our table. Where the fault lies is hard to say, for the supercargo often suffers at our table too. Our cook is getting lazy about bread baking.

Birds at Rapa from an old woman.

otaha, frigate-bird.

otu'u, reef-heron.

a'aia, white tern.

tavai, red-tailed tropic-bird.

ma'uroa, white-tailed tropic-bird.

oio, noddy tern.

tarapapa, yellow-billed tern.

kavika, sooty tern.

ivi, tatler.

tores, plover.

No turnstone, possible sandpiper.

o'orovea, cuckoo.

(Domestic chicken runs wild.)

No moho that she has heard.

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Birds at Apia from an old woman.

otaha, frigate-bird.

otu'u, reef-heron.

a'ala, white tern.

tavai, red-tailed tropic-bird.

ma'uroa, white-tailed tropic-bird.

oio, noddy tern.

tarapapa, yellow-billed tern.

kavika, sooty tern.

ivi, tattler.

torea, plover.

No turnstone, possible sanderling.

o'orovea, cuckoo.

(Domestic chicken runs wild.)

No moho that she has heard.

mo'ora aviri, duck.

No uru.

upa, reddish to brown or purple cap.

rupi, blue breast.

No ground dove to her knowledge .

(Bird size of chicken, flies, lives in ruts; a tubinares, black throughout, nests in holes in rocks.)

opeia, p. 1565

The delay grew longer and so we went up to a Chinaman's for lunch which was a real and welcome meal. Following this I started for the ship with a full and complete load. Met Mr. Beck a short ways down trail and traded him the four birds for fresh paper. I had shot and skinned a reef-heron while waiting at the beach; also skinned out last night's duck with sand and attempted to scrape fat off but did not succeed well. I than proceeded up to Maniota field where wild chickens were flushed the first day here.

Found nothing thereabouts, so at five returned and proceeded to the duck pond. Purchased some sardines, milk, and bread for our dinner tonight, which we ate at Aitkins'. Then I went into the duck field with dusk already setting in.

Not a bird present, but splash! one lit right before. Quack! Here comes another! Splash! They come over the tree tops so suddenly and drop down into the dark shadows so quickly that I cannot see to shoot them. I walk out along an old, over-grown bank (this is a long neglected taro bed), and one duck rises under my very nose. I try to cover him. Will he never raise to the sky-

mo'ora avini, duck.

Ko uru.

upa, reddish to brown or purple cap.

rupi, blue breast.

Ko ground dove to her knowledge.

(Bird also of chicken, flies. Lives in rata; a tamtamres, black throughout, nests in holes in rocks.)

opela.

The delay grew longer and so we went up to a Chinaman's for lunch which was a real and welcome meal. Following this I started for the ship with a full and complete load. Met Mr. Beck a short ways down trail and traded him the four birds for fresh paper. I had shot and skinned a reef-heron while waiting at the beach; also skinned out last night's duck with sand and attempted to scrape fat off but did not succeed well. I then proceeded up to Kamiota field where wild chickens were flushed the first day here.

Found nothing thereabouts, so at five returned and proceeded to the duck pond. Purchased some sardines, milk, and bread for our dinner tonight, which we ate at Aitkina'. Then I went into the duck field with duck already setting in.

Not a bird present, but splash! one lift right before. Quack! Here comes another! Splash! They come over the tree tops so suddenly and drop down into the dark shadows so quickly that I cannot see to shoot them. I walk out along an old, over-grown bank (this is a long neglected taro bed), and one duck rises under my very nose. I try to cover him. Will he never raise to the sky-

line? There he comes! Bang! He drops. Another flushes, quacking madly. Now he rises up to the skyline! Bang! He drops. A short lull. Soon more come in and I get two of them. But alas! I must wait till morning because it is too dark to see them after they fall.

Splash! One lights within three meters of me. I remain motionless on his side, but try to get the auxiliary into the gun with the opposite hand. Too late! He gets suspicious and swims away from the reflected sky light and into the shadows beyond the range of the auxiliary. This is so interesting that I remain until it is quite dark. The ducks are still swishing through the air over head, fluttering noisily and lighting heavily into the brush or water. I slowly work my way along towards the big pool. Is that not a flock there? Do they not move? Well, it's a long and foolish chance. Bang! No, nothing! Ducks raise from all around me. Oh, for a bit of daylight!

The engine on our ship is reported as having caused the delay this morning, and tide and light prevent leaving later than eleven. Some think that the engineer has made some interesting acquaintance during his two days here and desires to stay at least one day longer. He will, but not ashore.

This afternoon I went bare-footed. It is very tiring on the feet, not to say at times uncomfortable.

There are no etaus or papiroes ripe here, except a very few which myna has cleaned out entirely. The trees bear exceedingly heavy. Oranges too are later than at Rimatara and Rurutu,

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and much more than at Tahiti. Taro is the staple food, unless coconuts might claim the honor. Turkeys, tame ducks, numerous chickens, pigs, goats, cattle and horses are here.

April 8

Watched the clock from one o'clock until five. Proceeded to the duck pond and attempted to cross quietly through to the opposite side under cover of darkness. In the water on the near side two birds flushed. In the pool alongside the bank crossing the swamp more birds flushed. Still I didn't realize the impossibility of getting across and went on. Flushed the whole swamp. Too dark for shooting.

I took up a commanding position where I could watch for possible rail, and waited. Two ducks dropped into the water, but still too dark to shoot down in the shadows. Good clear light finally came and I raised up, but the two ducks had gone off into the tall weeds, and finally flushed beyond range. But later another came along and I got it. Then I searched for the victims of my twilight revelry last night. Three of them having dropped on dry land were considerably eaten up by rats or cats, and all alive with ants. None were good enough for specimens. A flashlight last night would have saved them.

With my guide of the past two days I hiked up to the other pond, but there were no ducks at all there. Two cuckoos were heard but I could not induce them to show themselves. My guide again assured me that no natives here had seen the eggs or young of the cuckoo. He came from Cook Islands and swears they

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never saw the eggs of this bird nor the young. I have offered twenty francs for the nest and eggs of them, but they tell me it is impossible because no one ever saw them.

Becoming impatient at the delay of the ship again today, I proceeded along the road towards the moorings. Of course, just as I got within sight, she heaved anchor and steamed out the channel. Overtook Raoul and his assistant not far back on the same road. We boarded the first boat that landed and went aboard. I skinned out the duck and scraped the fat off it as we put out to sea.

April 10

Cloudy weather about. A good breeze. One bet was doubled today on the expectation of reaching Rapa Saturday next. Rain has driven all passengers into the cabin, where a noisy conversation is being carried on across the full room by the disrespectful passenger from Tubuai and the Ex-districte Gendarme.

A good stiff breeze, favorable but not fair, is driving us towards Rapa. Those betting on six and seven days are crowing considerably already. While they crow, I must dig deeper and more steadily into Wilson's and William's Missionary Accounts, for they must be finished ere we arrive at Rapa.

This evening we had a good rain, which furnished the means of an excellent shower-bath for those of us who cared to get out of the cabin and take it. Of first class passengers, I was the only one who seized the opportunity. The sailors and second class were nearly all out.

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Read steadily all day and have made good progress through Wilson. Tried the topside at ten o'clock, but a drizzle scared me down below. At two, however, I went up and when I later added the army blanket to my covering I slept peaceably and warm enough.

April 11

Since the storm yesterday we have been becalmed. The ship rolls listlessly upon a very quiet but swelling sea. Two tropic-birds, red-tailed, came above us this morning, but were too high up for shooting. Just about eleven, smoke was sighted off our starboard bow, and now at noon a freighting steamer is in good view, headed SW.

This noon I cleaned out the cage of my parakeet (Uru rimatara), and observed that he had partaken freely of orange, banana, coconut, papiro, and canned peaches. He seems very lively, and takes great delight in chewing my hand when I hold him. I brought him down in the cabin, whereupon he attempted to fly out. I fear his wing should have been bound up. Apparently, however, he will live for some time unless the weather gets too cold for him down near Rapa.

April 12

Today I finished reading Wilson's account of the voyage of the "Duff", and immediately set to work upon William's "Missionary Enterprises". The value of the first over the second is incomparable.

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A few albatrosses were about today, and two red-tailed

tropic-birds. Last evening a good stiff breeze came up, and being fair we made splendid progress all night and most of today. But before retiring it had died down considerably.

April 13

Our wind is not fair, but still favorable, though very light. A noddy tern, and later a little gray tern, makes us think land is closer than the supposed sixty miles. Tropic-birds and shearwaters are about but not in any great numbers.

I am reading William's account and lamenting that in their religious zeal they had not at least a little scientific curiosity. But any tradition that to him sounded "fabulous" was completely overlooked. When will the light of knowledge enter this world of superstitious darkness?

Soon after noon the Island of Rapa was observed, a group of separated peaks that seemed quite wide apart. A light breeze off the starboard shoved us along at about two knots during this day and most of the night, so that the whole island was in sight by daylight.

April 14

The most interesting thing in bird life is the apparently numerous small, gray terns which we have seen all morning along with white fairies. Noddies have not been observed yet with assurance. A tropic-bird came up astern. A large white-breasted shearwater and a small white-bellied petrel were seen early.

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Vancouvers' remark that this island was dominated in appearance by apparent fortifications along the middle ridges. Roughly sketched and only a suggestion is the below.

This is a beautiful cliff for nests of shearwaters, petrels, tropic-birds and the like on this northeast side of the island. In places it is several hundred feet high. Some noddies have lately revealed themselves. Tropic-birds are around the cliffs.

A native has just boarded us,--real service this, to be met a few miles out at sea. More are in another canoe ahead. With skilful, well-timed, powerful strokes they easily came up astern while we were making about four knots an hour; seven oars in a narrow boat produce some effect.

We are now opposite the drowned valley which penetrates to the center of the island, at the mouth of which is a low flat islet. This may be the harbor, but we seem to be heading for the next point of land beyond which appears a shorter insert of water.

We held out until the beacon on the left point of the entrance was in line with the cliffs inland and opposite, when we commenced to swerve in towards the Island, going towards the rugged peak in distance. We are now going in directly toward nearby low hill. Half a dozen people are trying to instruct our aged Rapa pilot. The two natives we brought down with us are at the bow; the old fellow who first came aboard is in the port rigging; two

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more just came over the bulwarks from the boat astern. There are altogether too many pilots with conflicting ideas apparently.

A small covering of grass on the islet opposite us now would suggest bird nests, but the glasses reveal no life there. Our channel proceeds through a reef which appears very near the surface a hundred yards to starboard, but less than half that to port. Another of the twenty-four foot (?) boats awaits us and is to receive a line. They are alongside now. The veteran of this village is in it.

Landing at the village, I proceeded along the road up the valley in a northwest direction, until, having rounded three points, a fairly wooded ravine presented itself. Following a trail, I ascended the ravine beneath hibiscus and coffee trees, with a few others scattering through the grove, to about two hundred feet, where the trail I was on went out on an open fern ridge to the south of a small waterfall creek. I ascended this to five hundred feet elevation, where the tree ferns and ieie take possession of it.

I have used every call I can think of to attract birds, with absolutely no results. The wandering tatler was heard in the taro beds at foot of the ravines, and one was seen along the beach. White terns are flying above these trees. Our aged pilot, upon looking at Uru rimatara, says there are plenty of parakeets here.

Along the trail the children and women signified that the head of the valley was the place for birds, but I think they mean ducks, as that is their first idea that we are after game. By mimicking doves they assured me I could find some up here. Beautiful conditions for doves, warblers, flycatchers, and parakeets;

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and plenty of taro beds and marshes should shelter rail and ducks. The most of the lower hills are covered with a low dry grass and fern, but the ravines all seem to have groves of trees. Oranges are almost ripe here.

Calling for doves a little later, I got replies from the wooded ravine below and one above. I was detracted a while going down into the taro bed on the other side, not merely for three roots to lunch upon, but because I heard a strange bird down there giving two small piping squeaks in succession. I went down but could find no signs of it. When I attempted to mimic its call, it ceased and I never heard it after.

Crossed over and descended wooded slope of ravine. Coming upon a gulch of loose boulders, I stopped for lunch. Built a fire and set my taro to baking. Then went hunting above. Gygis terns were hovering above and alighting in tree tops. Saw two Polynesian (I'm rather certain) rats. Shot one but could not find him. They were eating something at the base of the petals of the flower of the candle-nut; and a bright yellow-orange flower too. Called doves but they would not approach. One went to my calling station while I was eating and I tried a long shot with ten gauge and missed him. Appeared rather bluish than green.

Very discouraged because unable to call a dove, I was returning along road, when at a taro patch, where I expected ducks, I saw two small black birds. It was some time after I changed shells that one made himself evident, and I have just blown up three feet of taro beds where he was. Retreated up hill to watch for more. Now I have a hunch of what Beck has been shooting at.

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Just heard one give his trill from the larger taro. Someone else is out shooting besides Mr. Beck,--Stephen after ducks, I suppose. There was no bird where I blew up the taro bed, and there wouldn't have been much left to him if he had been there.

Next I found a commanding place and sat down to wait for two birds I heard. One of them made his appearance and I shot him. While picking him up, I heard a squeaking, and returning to where I had laid the gun down, I could hear something in the weeds I had been walking on. Sure enough! I dug out another rail where I had stepped on his runway just in time to catch him.

Next I went around to the tall dense taro, and, separating the leaves so as to give the gun play, I tried coaxing with a sucking sound as near their call as I could. One came within six feet of me time and again, so I finally decided to break his legs, which worked well.

Returned to village at dark. Boat just came ashore with men after a bath, so I had half an hour to wait. Went up to Stokes' and had some salmon, taro, and a biscuit and jam. At the boat I found some dandy lobster waiting for me, so indulged.

Beck had obtained one rail, one dove, and some ducks. I had refrained from shooting at the pairs of ducks which flew over me while at the taro beds. Mr. Beck skinned out the rails while I worked on a duck. The dove is much larger than any we have yet obtained.

April 15

Yesterday Mr. Beck having observed shearwaters about the

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April 15

Yesterday Mr. Jack having observed shearwaters about the

cliffs, I am to sleep as high amongst them as possible. Spent the early morning about the taro beds looking for the rails which I could hear trilling and piping. Saw but one departing into grass. Shot a duck as she sat in the taro. Proceeded up the ravine above, and upon entering it saw two doves in trees opposite. Took a long shot with # 8, but failed to bring down the bird. Nor could I drop him from the air, nor again when he came back into the first trees.

Doves call in reply as they did yesterday, but will not approach me. Two native boys came up, and, as we are not spending hours upon ducks yet, I'll reward them with this one. A young gygis tern is in the tree tops being fed; I cannot see the nest. The boys have just succeeded in getting him for me. A shower has forced us under a rock for shelter and given time to bring up the notes.

A grove of coffee well cleaned made progress not bad, but above it, not striking a trail, we found going quite difficult. But dove's calling could not be resisted, so through it we scrambled. Finally we took a trail out of the brush to a ridge, and there one of my boys quit me cold; but the other came on up to the summit of the ridge, where upon one of those peculiar man-built, square-topped pyramids we ate our lunch.

The breeze from the west was chilly, for we were wet with tramping through the ferns. So we came over into the sunshine to eat our lunch. Curses! There goes a shearwater along the ridge behind us,--as large as P. chlororhynchus and light grayish-black above. From the cliffs I can hear them calling, one or two now and then.

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We follow along the ridge instead, unable to resist the temptation of two more shearwaters seen ahead. For a rest, I drop around into the welcome shade of an overhanging rock above a cliff. Some natives below to whom I halloo, and lo! here comes a shearwater to investigate the noise. But he does not place where he could be picked up, so I do not shoot. There are several above us, whither we go now.

Three small gray terns flying about from the cliff below. The boy is bound to wind me. He runs over these rocks like a lizard. (I have not yet seen a lizard on this island.) He runs along a ledge to the side of the knife-ridge we are climbing; returns; passes me, and skips along the next. A pair of shearwaters just passed within twenty feet or so of me. "Manu! Manu!" I rush ahead and see him coming back along the face of the cliff, clinging on with one hand, while in the other he holds a shearwater. Delivering it to me, he hastens back for the egg.

The bird killed and the egg carefully wrapped, I have returned to look at the nest. On the face of a cliff seventy-five feet high, above its talus, a slightly overhanging rock shelters a ledge along the outer edge of which a shrub and grass are growing.

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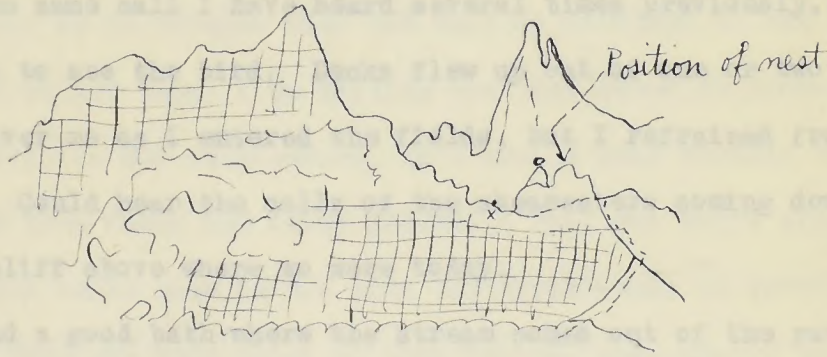
The bird killed and the egg carefully wrapped, I have returned to look at the nest. On the face of a cliff seventy-five feet high, above its talus, a slightly overhanging rock shelters a ledge along the outer edge of which a shrub and grass are growing.

There, in a slight depression, a handful of dry grass is unevenly spread, mostly on one side the nest. Fragments of shell show the nest has been used before. We have to work around this cliff to get next to the main mountain, where several birds are calling,--half a dozen pairs at least. I hope to be able to drop some of them upon the ridge. "Whă-ă-ă-ă-ă-wickoo! wickoo! wickoo!" -- all performed far back in the throat.

From the cliff gap beyond this knife-edge where the nest was, I shot four birds and landed fifty per cent. on the narrow shelves of the ridge, where grass alone saved them from escaping. All at an elevation of one thousand feet.

The only excitement we had descending was trying to hit a shearwater with rocks as he came close to us.



X--Place where birds crossed over and where two were obtained.

Beck got some doves, but Stephen made the catch of the day: several ducks, one shearwater (apparently different from mine), and four pigeons, besides finding a duck nest, which Mr. Beck will photograph Sunday. Restocked with shells, the lack of which brought me off the hill, and am out now for an hour or so after rail before dark.

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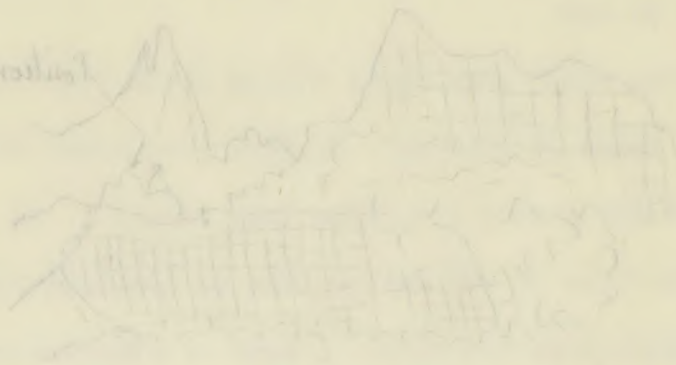

X--Place where birds crossed over and where two were obtained.

Back got some doves, but Stephen made the catch of the day: several ducks, one sheerwater (apparently different from mine), and four pigeons, besides finding a duck nest, which Dr. Hock will photograph Sunday. Equipped with shells, the lack of which brought me off the hill, and am out now for an hour or so after rail before dark.

A. I. Seale, collected in Southern Pacific, Mangareva, Makatea, Marquesas, Austral Group, Tubuai, Hoeno, Rapa,--collected fish and birds,--(not yet worked up, about 1903). Then to Solomon Islands.

Unable to locate any rails this evening, but heard several give their whirring trill and piping calls. They have also a sort of low, monotoned, conversational (?) note, with which two or more seem to entertain themselves. There were several of them throughout the numerous taro beds just behind the village. I saw two run into the weeds on the banks, but missed the one I shot at. No good conditions for coaxing them, though we tried it.

In the trees of the ravine above the taro beds I heard what might have been a cuckoo, but could get no sight of him. This is the same call I have heard several times previously, but cannot get to see the bird. Ducks flew up out of one or two beds. Two came over me as I entered the fields, but I refrained from shooting. Could hear the calls of the shearwaters coming down from the cliff above where we were today.

Had a good bath where the stream comes out of the ravine and spreads into the taro beds. My lad "Vai'a" picked me up this evening, and I had to drive back most of the village children. He is to go tomorrow if I can awaken him.

Barometer here this evening--100 plus feet.

April 16

Awoke this morning at 5:15 and struck out with Vai'a to hunt rail. We had no success until we reached the bed where I

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Had a good bath where the stream comes out of the ravine and spreads into the taro beds. My lad "Val's" picked me up this evening, and I had to drive back most of the village children. He is to go tomorrow if I can awaken him.

Barometer here this evening--100 plus feet.

April 16

Awoke this morning at 5:15 and struck out with Val's to hunt rail. We had no success until we reached the bed where I

coaxed the one bird Thursday in tall, thick taro. Here I coaxed two into range of the auxiliary with the murmuring whimper, a very light, monotoned, coyote whimper, "Whoo! Whoo!" continued at length. In one taro bed a duck raised and dropped again when I shot. Later, five were flying about, so I quacked and attracted them close enough to drop one of two shots. We will not starve for breakfast today.

Two good-sized, delicious taro roots and one duck quite sufficed. Filled our canteen and proceeded up the ridge after the meal. Stephen passed on his way over to taro beds in next valley. A few doves were calling where we cooked breakfast, but some ladies in the vicinity were making too much noise to even hope for birds to come near.

Lest it be thought that the rail is confined to the taro beds where we get them, I am writing now just after we crossed the ridge--elevation 600 feet--where, in a ravine head densely vegetated with tree ferns and other growth, a rail was heard piping. I have often heard them in the cane and marsh-weeds in several ravines. They are very thick on this island, from what I have seen.

Missed my first two shots at "Koku", the large dove of Rapa, but later hearing one call nearby I shot an auxiliary to scare him; then got him with a ten. Iris--reddish orange, to yellow at edge; bill--sepia brown to beyond nostril, tip straw yellow; feet--coral red. They have a deeper lavender cap than "Upa" of Tahiti; breast splashed with dark lavender; undertail coverts, pinkish lavender, yellow abdomen; side feathers, back

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Two good-sized, delicious taro roots and one duck quite satisfied. Filled our canteen and proceeded up the ridge after the meal. Stephen passed on his way over to taro beds in next valley. A few doves were calling where we cooked breakfast, but some ladies in the vicinity were making too much noise to even hope for birds to come near.

Lest it be thought that the rail is confined to the taro beds where we get them, I am writing now just after we crossed the ridge--elevation 800 feet--where, in a ravine head densely vegetated with tree ferns and other growth, a rail was heard piping. I have often heard them in the cane and marsh-weeds in several ravines. They are very thick on this island, from what I have seen.

Missed my first two shots at "Koko", the large dove of Hage, but later hearing one call nearby I shot an auxiliary to scare him; then got him with a ten. Iris--reddish orange, to yellow at edge; bill--eagle brown to beyond mostril, tip straw yellow; feet--coral red. They have a deeper lavender cap than "Uga" of Tahiti; breast splashed with dark lavender; undertail coverts, pinkish lavender, yellow abdomen; side feathers, back

and upper parts--green; wing primaries, secondaries and tail feathers--grayish green, reflecting bronze in light; head and neck--ashy gray; throat--lavender.

Followed on down the main trail until a branch took off to the left. This fork we took. It led us to some deliciously ripe oranges, sweet and juicy. Here a dove came quite over our heads and lit in a nearby tree. I tried a long shot with the auxiliary at its head but missed, so had to shoot it at close range ere it departed beyond the tree tops. Blew most of one wing off it.

After lunching on oranges and hard tack, we proceeded towards the cliffs. A good trail led through a coffee grove, and then to the taro beds in next valley. At a terraced bed some fifty feet above the stream, hearing rails, I tried to call them. A dove approached, and by cooing twice I got it to come well within auxiliary range and dropped it.

We then took trail down to creek above taro and marsh at mouth of the valley. Shot at a rat running through grass but auxiliary was defective and only sputtered. At the hut beyond stream were two more rats, one of which I shot at as it departed into grass, but again missed. There is little doubt in my mind that these are the Polynesian rat, very close to 240--50 m. in length.

We took a trail leading towards the main cliffs on the south of valley.

Koikoi--cuckoo.

Koko--dove.

Koto koto--rail.

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Kolkol--[illegible].

Koko--dove.

Koto koto--rat.

Shot a cuckoo after following it into a very rocky, brushy place; also a rat. Later, while backing up hill to get a sight of a dove in a tree, I wallowed through a hornet's nest. They warned me not to stay there. Saw two gygis terns chasing a cuckoo in valley far below me. Doves are much thicker here and more curious than across the ridge. I am on a sort of central ridge --700 feet elevation--which I thought was leading up to the main one, against my boy's advice.

Several shearwaters are calling at cliff; I am tempted to spend night with them. -- But when I gave the birds to the boy and told him to "Haere", he "No save'd" at length, and finally began to shed tears, so I came down with him.

Stephen brought in four doves, with as many ducks, so we had plenty of birds to skin this evening. Finished at ten o'clock. A little bit tired.

April 17

Rather late getting ashore. Spent two hours trying to coax rails. Obtained one of two seen. Patience is the best attribute of a rail hunter. By keeping an eye open along the space between two rows of taro stalks, one has but to wait long enough, and if a rail is in the bed he'll likely cross the track. You may see them twice but once is usually all. One will sometimes be curious enough to investigate a noise.

No reef-herons nor plovers seen at Rapa. Wandering tatlers observed in taro beds and on beach.

Am going up to cross divide and hunt doves and cuckoos.

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Mr. Beck went up this morning and photographed the old fort where the boy and I ate lunch day before yesterday.

A brilliant, cardinal red dragon-fly, with red spots in wings; eye, brown red; fore part of head, cardinal, is on a weed blade beside me. It is about 4.0 cm. in length. There are at least two other species here; one with green thorax, brown abdomen, with a reddish tip as I remember it; a larger species, which is quite numerous over the fern hills, has an orange abdomen and brownish gray thorax.

11:00 A. M. On the ridge--elevation 750 feet. The last water was at 550 feet, a hundred meters or so down the trail. From this ridge no less than eleven ancient fortifications (refuges or temples--marau) can be seen, not counting several of less characteristic shape. Here is certainly a field for an archaeologist, and it is no slight one either.

I was going to note the scarcity of shearwaters about the peaks this morning with a negation, but one called and gave me the lie. But there are not so many there as last evening, by any means. Well, I'm all prepared to sleep with them tonight. The rest of today is for doves and cuckoos, and possibly rails.

Deciding to call doves from above the groves, I found it worked fairly well. The nearest of three or four answered. I followed up by placing myself in a commanding position above the grove. After considerable calling, a dove came flying from tree top to tree top towards me. He placed out of sight, so I could not shoot until his next move, which was up and along the grove top. I hit him with eights, but he flew several yards before dropping

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Crossed over to next grove. No results! Took trail down in towards cliffs, and where it entered a patch of woods in a ravine I stopped to coo for doves. A cuckoo flew over me and into the trees, so I changed my call and had the satisfaction of seeing him come my way and disappear. Suddenly I heard a slight noise nearby, and there he sat on a branch of a shrub looking at me, and no auxiliary in the gun. I carefully took out a shell and inserted the auxiliary and shot him in the head. He crawled away a little in the dense thicket of ferns, but somehow I found him.

Came on over to the amphitheatre below the cliffs, where I am getting considerable response from doves. Heard rails, cuckoo, and I suspect something else. A few more shearwaters than formerly. The two peaks above are, by the map, more than 1650 feet high. The base of the cliffs is about 800 feet.

Amidst ferns, wild sugar cane, and damp jungle generally, I am trying to call the rails I hear every now and then. One dove has been the only profit of the past two hours. There being neither taro beds nor swamp here is a good sign that the rails live in almost all fern brakes on this island, where they are the most numerous bird. I would like greatly to get a specimen from here to be sure they are the same as those inhabiting the taro beds.

Three o'clock, and the shearwaters are calling very frequently. No results after several minutes of calling. If there

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were better places to observe I should be tempted to remain longer, but one can only see a few feet from one's position. No success. Out of jungle I could hear rail in fern brake between the grass hill and the bush, so I cut a swath across fern bed, and then waited half an hour without again hearing them closely.

Proceeded up to ridge where I had left shells and grub and started for the cave and shearwater cliff, but the cold east wind reminded me that the cave faced east and was wide open. So, after climbing the first hump, where I shot a little gray tern which had come out from a cliff below when I shot at a dove flying over the ridge above me, I changed my mind and returned to the fern brake. There I ate lunch of veal-loaf and biscuits while watching and calling for rail and doves. Nothing seen but a rat and it only briefly. Also saw a rat as I climbed the trail in the grass but did not have auxiliary in.

After dark I moved down beside a large rock under a corner of which I can crawl in case of rain, and beside which was a good level bit of grass without a rock in it. There I built a fire and roasted five small taro roots, upon which and the rest of the veal-loaf I dined, with oranges for drink and desert.

The rails were "clattering" from fern brakes quite frequently until seven o'clock. The shearwaters were thickest about sundown, being very quiet by seven. A few gray and several gygis terns were seen and heard. The cuckoos and doves called from the jungle until dark. The shearwaters quieted down to silence ere I went to sleep.

One o'clock and no noise.

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April 18

3:00 A. M. One shearwater called.

3:40 A. M. White gygis tern clucking.

6:00 A. M. At least one shearwater calling frequently. Heard a little gray tern early this morning. A few rails have already called and are piping. Tropic birds are croaking; doves cooing; white terns flying past to sea.

Elevation of camp--750 feet. Cloudy and threatening to rain.

Spent an hour trying to coax rails out of ferns. Saw no shearwaters about cliffs during that time, where last evening I could count six against the sky whenever I looked up, and frequently more. Doves are obstinate too this morning. Have decided to go down on this side and try the taro beds below for rail, hoping to pick up a dove or two along the journey and when crossing back this afternoon. Heard a cuckoo in woods below me. Have descended to the woods, a pocket two hundred meters across and twice as long, where the cuckoo is. A dove answers my call but will not come. As I descended, I roughly counted fifty fairy terns flying above this small grove.

Found no rail in the taro beds. Rain commenced between eight and nine o'clock. I built a fire in a native hut and baked some taro for breakfast. There were two rats about the place but I could not get them. The natives here protect these Polynesian rats because they help gather the coffee by cutting down the berries, so the natives report. A rather heavy shower came while

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No doves astir, so I struck out for the village of Ahurei. Raining lightly but steadily. Rather windy as I reached the ridge, which made me hustle to keep comfortable. As I reached the foot of the trail the boat put out for shore from the ship which lay at anchor around in the shelter of a point opposite the village and up the bay a bit.

Went to Stokes' cabin and had a cup of tea, some taro, a banana, and crackers and jam. I changed into my pario and a warm shirt of Stokes'. An hour later I went down to the boat and left hunting coat and gun there while I searched for the crew. Finding Raoul, he informed me the boat wouldn't go for an hour or more. So, asking him to call in at Stokes' and tell me when they went, I returned to dry clothes and a book. At five o'clock Mr. Stokes was out and reported the boat gone. I was mad but consoled myself in a book on the origin of the Maori by G. Percy Smith. Made up a bunk of odds and ends and slept very comfortably.

Soon after one o'clock the rain came down heavily, very heavily, with fearful gusts of wind which blew rain into the latticed porch of the Stokes' house.

April 19

Went down to dock soon after seven and found boat there. Returned and found Raoul who forestalled my scolding by telling me how the ship had been blown about yesterday evening and night. The anchor not grasping solidly dug around fearfully, and several

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times there was danger of drifting ashore. So, after all, this is not such a marvelous harbor, for even a well sheltered harbor is worthless without a good anchorage. The Captain says his glasses dropped suddenly at midnight, until they finally recorded 747 mm. (our aneroid registering 28.85, a drop of .80 of an inch since Sunday morning when I last noticed it at sea-level).

This morning promised fair. Mr. Beck went to photograph the duck's nest. I came out and spent remainder of day skinning terns and shearwaters obtained by Mr. Beck yesterday during the storm out at the Island.

We were booked to sail at eleven this morning, but about that time the other side of the storm hit us, and hit us hard. But after shipping considerably our anchors held in twenty fathoms. The rain came down in torrents, and at times was whipped into a smoky mist by the fury of the gale. I have seen some winds in Snake River Valley, but never anything like this. It whipped our ship from one side to another; flopped a native long-boat upside down; and blew things that were not solid about the deck like paper. What sport it would have been at sea, for us who do not have to face the storm like the sailors do!

Towards evening the fury of the gale abated, and the glass is slowly rising. But we are still having some furious squalls. This storm has interfered considerably with our collecting, and now holds the ship from sailing. For awhile Mr. Beck had seen as bad storms as this, but finally some extraordinarily furious blasts made him acknowledge that this was the worst he had ever seen. Perhaps we were fortunate to be in port and in

times there was danger of drifting ashore. So, after all, this is not such a marvelous harbor, for even a well sheltered harbor is worthless without a good anchorage. The Captain says his glasses dropped suddenly at midnight, until they finally recorded 747 mm. (our barometer registering 28.85, a drop of .80 or an inch since Sunday morning when I last noticed it at sea-level).

This morning promised fair. Mr. Beck went to photograph the duck's nest. I came out and spent remainder of day skinning terns and shearwaters obtained by Mr. Beck yesterday during the storm out at the Island.

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such a good harbor, but I would like the experience of a hurricane at sea, once at least, as long as we have good sailors.

April 20

The weather being fair today, we got underway shortly after eight o'clock. I blew the duck and shearwater eggs, all but the two rotten duck eggs, which will require soaking. Cleaned out the bird cage and noted that Uru rimitara is still quite a healthy and saucy bird. If he lives twelve more days I win five francs from Mr. Raoul who says that some have been taken to Tahiti from Rimatara before, have lived twenty-five days or so, and then died. The way this fellow eats ripe bananas, papiros, and the like foods he should not die from starvation. If he survives after being poorly cared for during the past storm, surely he should live a little while at least. Perhaps Papeete is a little too hot for him.

Filled out egg-data blanks for the Christmas Island and Rapa eggs. This part of our collecting, like field notes and habit studies, suffers from the dominating idea of skinning as many birds as possible in the time allotted for each place. Except for purely taxonomic purposes a great number of specimens is not worth as much as a few less with more time spent photographing, observing, and note writing. One learns more about the birds by sleeping out near their haunts than he ever can learn hunting through the region.

At Rimitara the natives said the rail could be caught in rainy weather. Here I neither saw nor heard a sign of them during

such a good harbor, but I would like the experience of a hurricane at sea, once at least, as long as we have good sailors.

April 30

The weather being fair today, we got underway shortly after eight o'clock. I blew the duck and shearwater eggs, all but the two rotten duck eggs, which will require soaking. Cleaned out the bird cage and noted that Dyn Kimistera is still quite a healthy and saucy bird. If he lives twelve more days I win five francs from Mr. Raoul who says that some have been taken to Tahiti from Rimatara before, have lived twenty-five days or so, and then died. The way this fellow eats ripe bananas, papitos, and the like foods he should not die from starvation. If he survives after being poorly cared for during the past storm, surely he should live a little while at least. Yerange Fagoete is a little too hot for him.

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At Rimatara the natives said the rail could be caught in rainy weather. Here I neither saw nor heard a sign of them during

the hours of rainy weather I was afield. Perhaps this was altogether too stormy for them. Not a sound was heard from the doves after the rain commenced. As I crossed the ridge at noon that day nothing was seen nor heard of the shearwaters above, though I'll admit I did not pause very long to listen or look. The rail I caught Sunday morning Mr. Beck completely forgot to collect on his return from photographing the old fort above. We had decided on a tree, in the forks of which I was to leave any rail obtained that morning. So we have but the six.

The Island of Vavitao being but eight miles out of our course, Mr. Beck has engaged the vessel to stop there two days for our work. We were fortunate here at Rapa in having the native, Stephen, to help hunt. He was out after ducks all the time, so Mr. Beck had him bring in what doves he saw. He got more of them than we did ourselves, and one shearwater, besides finding the duck nest. Since he talks both French and native, he would be a very helpful accessory to our expedition and could help enough to permit botanical collecting as well as birds and eggs. It always seems that so much money is spent upon such an expedition with but meagre results, while at the same time so many things are being passed up that might be collected.

As we leave Rapa, the little gray, a few noddy and white terns, and tropic-birds are observed. Most of my time will be spent at the desk on the Tahitian language and Ellis' "Polynesian Researches".

I should not neglect recording that during the storm it was quite chilly, especially if one were wet. The Tahitians

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The island of Vaitao being but eight miles out of our course, Mr. Beck has engaged the vessel to stop there two days for our work. We were fortunate here at Haga in having the native, Stephen, to help hunt. He was out after ducks all the time, so Mr. Beck had him bring in what doves he saw. He got more of them than we did ourselves, and one shearwater, besides finding the duck nest. Since he talks both French and native, he would be a very helpful accessory to our expedition and could help enough to permit botanical collecting as well as birds and eggs. It always seems that so much money is spent upon such an expedition with but meagre results, while at the same time so many things are being passed up that might be collected.

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I should not neglect recording that during the storm it was quite chilly, especially if one were wet. The Tahitians

think it is amply "toitoi" today. To me it is just comfortable. Four more days of hunting will find me just about shoeless and trouserless. My personal expenses are about one-third shoes, one-third hunting trousers, and one-third postage stamps, envelopes and writing-paper.

24 miles by the log from Rapa. A pair of tropic-birds (P. rubricaudus) flying above the mast.

35 miles by the log from Rapa NW. A wandering albatross just came up astern and passed on to the northward. Beck and I were busy breaking out the guns, so I did not get to see him except by glasses after he had left us,--a regretful account of that greatest of events an ornithologist meets with.

During the rainstorm while searching for the boat crew I had occasion to cross the bridge leading to the residence of the administrator. In the creek bed below was a marvelous sight. No less than sixteen native women, notwithstanding the cool drizzling rain, were making "poipoi", which is nothing but well mashed and well kneaded taro roots. Seated or, in some instances, squatted behind large flat stones with a pounder of considerable heft (lava boulder recilinear and about 3 x 4 x 6 inches or even larger) these husky Rapans smash the taro root with one resounding blow. After once squashed thin it is turned and kneaded with the left hand, while the right continues to wield terrific blows upon it. The deftness of withdrawing the left just before the stone strikes is amazing. Another root is beaten and then kneaded into the first. This process is continued until a mass of "poipoi" about the size of an eight-loaf baking of yeast dough is accumulated.

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24 miles by the log from Baya. A pair of tropic-birds (P. rubricauda) flying above the mast.

38 miles by the log from Baya NW. A wandering albatross just came up astern and passed on to the northward. Buck and I were busy breaking out the guns, so I did not get to see him except by glances after he had left us,--a regretful account of that greatest of events an ornithologist meets with.

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Then the real work commences. This mass is kneaded and pounded until it is about as light and fluffy as good yeast dough. Then it is wrapped in the broad leaves of the "opui" which are gathered by the women from the wooded areas far up the mountain slopes. In this container it is allowed to ferment with whatever old bacteria get into it from the creek water where the roots and rocks and women's hands are washed. It is eaten without any cooking, in true Polynesian style. Our cabin boy, a man with some fourteen children well dispersed through out these various islands, gave us an exhibition one day. With the only tools God gave him, he scraped up a tremendous handful of the doughy "poipoi". Then, with a manoeuver indescribable, he got his mouth around that wad which was larger than a well raised dumpling that would make a good meal itself. He ate dozens of those wads at one sitting. We had a few dozen bags of "poipoi" aboard when we sailed this morning.

As we got well on our course a swell caught us just right and we shipped considerable sea over the leeward rail, much to the disgust and discomfort of the goats on that side of the deck. Two bags of "poipoi" were broken in the consequent upheaval of the tilt. The chickens, ducks and pigs thoroughly enjoyed it. Personally, I haven't summoned the courage to taste it. The parakeet refused to look at it, much preferring banana.

The sixteen women ranged from young girls fully developed to middle-aged women. They were all dressed in old clothes, but enough to cover most of them. A few powerful shoulders and strong arms were revealed, and of course the heavy coarse feet and legs

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of the Polynesian. They had considerable sport amongst themselves by making vulgar, suggestive signs to me. But that has become such a common thing that it is not even surprising any more. It is easy to ignore what is not even attractive. Poor, ignorant children! What does this world hold for them? The shallow pleasures of the senses external alone are theirs. We sometimes pity the labor slaves of our civilization, but they have at least to work every day and full eight hours. An hour or two of work each day is ample here at Rapa. The French Government is certainly deficient in its colonial affairs. There are no schools worth mentioning, except at Tahiti. Each island ought at least to have a school. But of course with a little education coffee could not be purchased at one franc fifty per kilo, nor rice sold at five times its market value.

The women in Rapa do all the manual labor. The duty of the men is to fish and gossip. What with their taro beds and coffee plantations (which are not extensive), and gathering firewood, candle-nuts, and leaves for "poipoi", and then their cooking they manage to keep busy an hour or two a day. The wood, leaves, taro roots, grass and reeds for thatching and floor are all carried over the shoulder without pole or other convenience.

I said the men do the fishing, but some of the canoes going out in the evening have a few women in them. Both sexes are able oarsmen and paddlers. Most of the fishing is done at night. Lobsters are very plentiful here. In other food lines there are rabbits on the islands and goats on the hills. Pigs are rather scarce and none wild. The village abounds in dogs and

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a few chickens are there. Horses not overly abundant. In the mountain ravines bananas and a few fei grow but not abundantly; oranges are to be found occasionally but not often; even guavas are scarce; pineapples and sugar-cane are rare, though a wild variety is everywhere. The few cocoanut trees are in very dismal shape; no mangoes nor other fruit trees noticed; no bread-fruit. Their chief articles of diet ere contact with man must have been taro and fish.

April 21

A few showers during the night, but I managed to sleep out through them. There seems to be a zone in this latitude marked by the almost total absence of birds. No observation obtained today on account of weather. With the log reading 166 sea miles from Rapa towards Vavitao, two red-tailed tropic-birds and two little gray terns (Procelsterna cerulea) were observed, fishing before the boat. Spent this day threading labels (650) against future needs when time will not be so plentiful.

172 miles by the log. Three more Procelsterna cerulea and another tropic-bird, red-tailed. The three little gray terns have kept near the ship all afternoon. It is past dinner time now and they are still with us. Mr. Beck surmises they are lost, probably blown away from Rapa in the storm. This certainly is a long distance from land for them, so far as we have yet observed.

Our fair wind has failed us considerably, but the starboard breeze is still slightly astern, though it is rather light. We should make the Island of Vavitao tomorrow sometime. This

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April 23

A few showers during the night, but I managed to sleep out through them. There seems to be a zone in this latitude marked by the almost total absence of birds. No observation obtained today on account of weather. With the log reading 166 sea miles from Kapa towards Vavitao, two red-tailed tropic-birds and two little gray terns (Procelsterna cerulea) were observed. Fishing before the boat. Spent this day threading labels (630) against future needs when time will not be so plentiful.

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unfortunately gives us a Sunday to spend in port, which is rather expensive. This journey, although it has not netted us so many birds as Christmas Island and the Marquesas, has at least been one of more employment and less sailing than the other.

Barometer raised slowly following the storm Tuesday until it reached 29.40 inches, but it has gone down today to 29.30, coincident to dull leaden clouds and occasional drizzles of rain.

April 22

Sighted land towards evening but not enough wind to make port. Laid to for the night. A few tropic-birds seen during the day.

April 23

Not much breeze and no land in sight at eleven. A red-tailed tropic-bird about ship this morning. One of the boys caught a good-sized bonito, and he certainly tasted well after so many days on canned meats.

12:00 M. Forty miles south of Vavitao.

1:35 P. M. An albatross, pretty big for anything except the wandering, soared around boat. I broke out my gun and shot him astern, but the Captain refused to turn the ship which would have required gasoline; or even to lower the boat to pick him up. We are going less than two miles an hour. The Captain says it is too rough to lower the boat. I suggested that it would be good "boat drill", for some day it may be more than rough. He could neither be bribed nor induced to get the bird, so we lose a valuable specimen which we certainly should not have shot had we

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expected any such obstinacy on the Captain's part. We certainly are losing many specimens and wasting considerable time with this mode of collecting. A schooner of our own would have been at our command, and the bird would have been ours.

April 24

9:00 A. M. In the lagoon at Vavitao where the pilot has just arrived. We are below the highest points of the land, perhaps a thousand feet high, where a long stretch of cliff with a forested talus slope extends along the lagoon shore. The south end of the island is composed of low hills with groves and individual ironwood trees upon them. The taro, I am informed, is beyond this ridge. Thither I go today to find a suitable place to hunt for rails tonight and in the morning.

The two canoes that came out with the pilot are rather interesting, being constructed of five pieces to a side and fastened with cinet. Above the bow extends a platform the width of the canoe and three feet beyond the bow. Their length over all is more than twenty-five feet. The streamline construction and grace of their shape is very striking. One can imagine a little of how the canoes of pre-missionary days were made. Of course, with European inplements introduced, mostly the adze and axe, it is no marvel that the workmanship is neat and thorough. What we lack is a good scientific account of the methods employed in their primitive condition. The cinet fastening the parts

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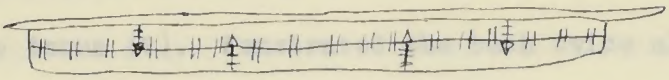
together are invariably in pairs. Some efficient gum must be used to prevent the seams from leaking, but as most primitive people discovered something of that nature it is not to be wondered at that the breadfruit tree and coconut should furnish gum and wadding for seams.



Noddies and white terns are as usual first in evidence. A red-tailed tropic-bird came down from the cliff. A pair of birds soaring about the south peak remind me of the Rapa shearwaters, but Mr. Beck says they are terns to him. How best to employ my Sunday afternoon is now the question. Hibiscus forms most of the talus slope covering, plantain extending well up against base of cliffs. Rather barren along summit, probably grass and short ferns. Another pair of black birds and some singles flying about the north end of the cliffs. Terns, or shearwaters?

Came ashore at ten for an hour before breakfast. Mr. Beck has an audience looking into the finder of the graflex. The wandering tatler let us know of his presence as we moved along the lagoon channel. There are no myna birds here as yet. One native advises us to go after "wild chickens" instead of birds of the tribe Avis.

Came ashore again after breakfast, prepared to spend the night afield. Planned on crossing over ridge but could not pick up any trail, so kept to road around the island. Below the

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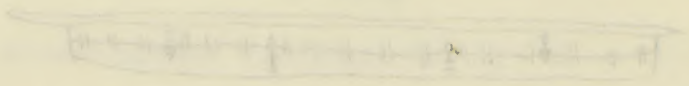

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Came ashore again after breakfast, prepared to spend the night afield. Planned on crossing over ridge but could not pick up any trail, so kept to road around the island. Below the

north point I entered a coffee grove, at the head of which grew some ripe oranges. What a treat to find them ripe and plentiful! From now until December all mountain work will have that additional treat. Found a cuckoo's feather, and so have tried at length to call him. Overhead, the red-tailed tropic-birds are scolding fiercely. I counted sixteen at one time above this rock. Also one or two terns (?). Penetrated the bush twice along the trail but could raise no sign of birds. A native tells me ducks, cuckoo, and rail are here, very likely. Threatens rain. As I put the notebook in my pocket, a cuckoo flew from directly overhead into the bushes some meters away. I thought I saw him, so fired a ten. Again he flew at right angles to my shot and lit not far away. Coaxing brought him within the reach of the auxiliary aimed at his head. If this is the only landbird here, what are its nesting habits?

On a log freshly hewn I found a number of black and green, red-legged Coleopterous insects breeding. The males fought rather savagely at times. Of them I collected two pair. Plenty of tatlers along the beach, but I have not yet got a good auxiliary shot at one. Took a side trail into bush with interspersed orange trees, guava, coffee, bananas, papiros and the like. Hibiscus prevails. Called and obtained another cuckoo. Flies of a small species with black-banded, gray abdomen are fearfully bothersome. When I shot the cuckoo a chicken cackled farther up the hill side. Mosquitoes are buzzing around, for it is cloudy and threatens rain.

Returned to beach and shot first reef-heron and tatler seen. There were two other herons in some trees and they acted

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Returned to beach and shot first reef-heron and tattler seen. There were two other herons in some trees and they acted

strangely, but I could see nothing of a nest. The tatler is very prevalent along the beach. A cuckoo sauced me for shooting, so I coaxed him over and got him with auxiliary. The natives seem to know nothing about the rail, nor can I learn anything about doves, shearwaters or other birds.

Stopped here beneath the shelter of a large ironwood tree, where is seated an aged native. He has taken a fancy to my "tipi". They have brought me a plate of eats "maa", the maupi nut roasted, which I always understood was used to stultify or half way poison fish. Well, it tastes fairly well. It probably will not rain after all. But it threatens very seriously so I have taken shelter in a native house, built European style. Here my host brings forth a plate of dried banana, and a coconut, both of which are very welcome indeed. He has perhaps fifty bundles of the dried bananas in the opposite corner of the room. Two francs each. The natives prefer the name Raivaivai to Vavitao, which they say is Pretani. They are now inviting me to sleep and eat here, and are joking about the young ladies outside who have joined the throng of observers.

Just before we came in here, I saw one flock of ducks, about four, flying above the point of land beyond this village, and while I watched them, two more lit in the lagoon at the extremity of the shallow water and rocks out from the point. I cannot learn anything except "Aita" about birds in the taro beds, and as yet, I have heard nothing from the beds near this place. I think their style of cultivating taro here is not

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Just before we came in here, I saw one flock of ducks, about four, flying above the point of land beyond this village, and while I watched them, two more lit in the lagoon at the extremity of the shallow water and rowe out from the point. I cannot learn anything except "Alte" about birds in the two beds, and as yet, I have heard nothing from the beds near this place. I think their style of cultivating taro here is not

conducive to the existence of the rail. The beds do not stand in water as they do at Rapa, Rimatara and Tubuai. A drainage ditch surrounding them keeps the bed surface slightly dry on top, which would not furnish good food for rails. Reef-heron fishing along beach before village. Tatlers present too.

I do not think I have as yet recorded what inveterate smokers these natives are. They raise their own tobacco and it appears to be sun dried. Then just before they are ready for their smoke, they have to further dry it over whatever flame or coals are handy. During the daytime they generally carry a small stick of wood, one end of which is smouldering and can be blown into a live coal at the desired moment. Over this coal they dry their leaf of tobacco. Then with a thin strip of pandanus leaf as paper, they roll a small cigarette and smoke it. Smoking here, as elsewhere, is more a sociable affair than anything else. They nearly always pass the pill around after they have a few puffs themselves. The worst of it is to be in the same room where they are drying out the leaf. It smells as bad as a sheepherder trying to get a smoke out of pipesheidsick or horse-shoe chewing tobacco. They seem to regret the fact that I do not smoke because it would mean a real smoke for them. Well, that is one advantage of the weed,--it makes friendships readily.

I no doubt hurt the attendance at church tonight, for several children and two of the elders remained here, while the rest have been singing for all they are worth. Although I have come over to my bed and signified my intention of retiring, my audience remains unmoved. Church seems to be mostly a "sangenfest",

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their singing being mostly a very similar chant. I imagine it a relic of their former historical chants, but now no doubt the words conform to their new religion. Oh, to have been in the field when no outside influence had altered the primitive conditions! It would have been worth the risk of being eaten to have seen these people as they were then. Now they seem to be but a lot of spoiled children who have nothing on earth to do.

The cocomuts here are of a very inferior grade and the trees only scattering and unhealthy. Bananas do well, and the dried or evaporated ones seem to be an important product. Coffee also is produced in small quantities.

April 25

Had breakfast this morning with mine host. It consisted of boiled eggs, three of which were good and the rest slightly incubated. A nest having been located, the whole were boiled up. The natives enjoyed them. The coffee was very strong and I delayed too long to take some sugar, and consequently lost out. Had them grate a cocomut and one of the men squeezed it in his hands, letting the milk drip through his fingers into my cup. I supplied a can of veal-loaf, which they thoroughly enjoyed, and a can of jam, which they did not seem to care for, the young boys refusing it as too sweet. One man enjoyed it, however, and the last I saw of him he was hanging onto it. Taro, of course, was on the table.

They caught me a couple of spring chickens by tying a fish line to a post and then making an overhand knot between

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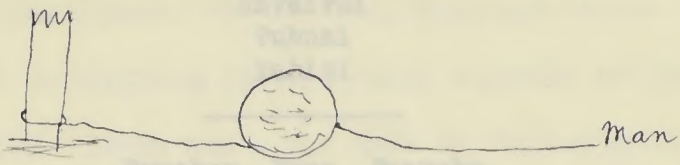
They caught me a couple of spring chickens by tying a fish line to a post and then making an overhead knot between

post and man. With a large loop in which grated coconut was thrown the trap was completed. The two chickens were caught at the first try for each. One young lad carried them; another carried my bag of shells; a third the gift bag in which were two bundles of dried bananas, three of vanilla beans, and some mangoes; one of the men carried the gun, and the other accompanying me, I proceeded to the ship.



It being rainy, I decided to skin birds and hunt later. In the afternoon early, Mr. Beck and Stephen returned with two white spotted herons and one pure white. We skinned birds until nine o'clock, when we succeeded in finishing them up.

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BOOK XIV.

Ravaivai
Tubuai
Tahiti

Papehue, Hopa, Faarahe.
Vaihiria

April 26--May 25, 1921.

Ravaivai, Austral Islands.

April 26, 1921.

Came ashore this morning to ascend mountain and try for tropic-birds. Where I turned off into the brush I got a cuckoo, with very little calling. Reached the ridge after a strenuous bit of brush scrambling at an altitude of 650 feet. Flushed one wild chicken (probably the jungle fowl) from the tree tops. The yellow-billed tropic-bird is here, as well as the red-tailed. I have one of each lying somewhere beneath the cliffs now. Can easily reach the red-tailed, but don't know where the other fell. I am hoping it will remain cloudy because that will give me three more hours for hunting and the birds are most playful about the cliffs at midday. Just dropped another yellow-bill.

BOOK XIV.

Navalvai
Tubuai
Raiatea

Papeete, Hope, Faaroha.
Valdivia

April 26--May 25, 1921.

Navalvai, Austral Islands.

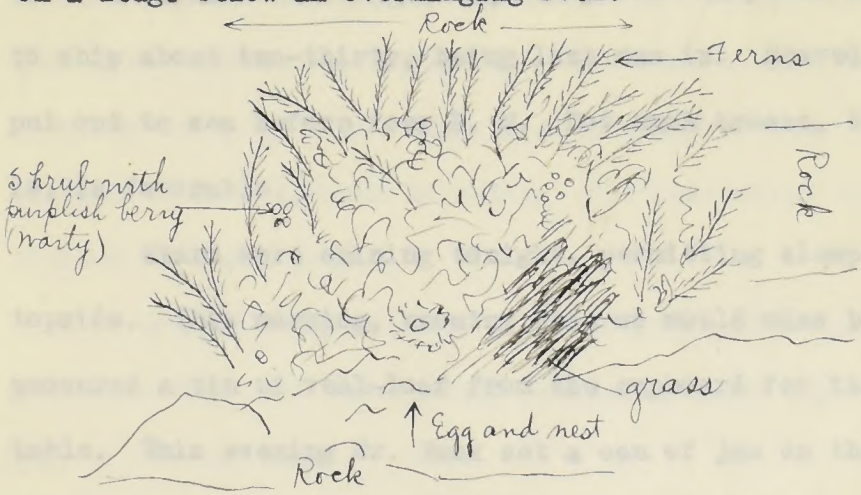
April 26, 1921

Came ashore this morning to ascend mountain and try for tropic-birds. Where I turned off into the brush I got a cuckoo, with very little calling. Reached the ridge after a strenuous bit of brush scrambling at an altitude of 600 feet. Flushed one wild chicken (probably the jungle fowl) from the tree tops. The yellow-billed tropic-bird is here, as well as the red-tailed. I have one of each flying somewhere beneath the cliffs now. Can easily reach the red-tailed, but don't know where the other fall. I am hoping it will remain cloudy because that will give me three more hours for hunting and the birds are most playful about the cliffs at midday. Just dropped another yellow-bill.

Climbed a hundred feet or so down the cliff, which was easily done, and got my red-tailed tropic-bird, a beautifully pink tinged phase. One wing was very bloody, but is a good specimen. Just let one go by to locate its nest, which it has entered. I may be able to climb to it.

The interesting phenomenon concerning this island is the reef and its islets. To leeward, the reef itself is barely discernible; to windward (SE), stretch a series of low, sandy islets, well wooded. There are a few more to the southwest. The island is a long cliff, with a talus slope and a little tillable soil below it. The southwest end is a little broken; the rest is quite regular. My judgement of range up here today has been terrible. Missed many shots. Must now retreat for lack of shells.

Took a ledge at elevation of six hundred feet and proceeded along it, investigating likely looking places for bird nests. At last found a red-tailed tropic-bird beneath some bushes growing on a ledge below an overhanging rock.



The nest was of dry sticks, grass, leaves and ferns, slightly lined; shallow scooped out basin in detritus below bush on rock below foot of cliff. One hundred foot cliff above.

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Noddies are nesting here. It was they we saw from the boat. No signs of petrels or shearwaters. One little gray tern flew by but while within auxiliary range I was loaded for larger birds. Have been able to get but one noddy where I could pick it up.

Followed along the base of the cliff searching for the two yellow-billed tropics, but could not find them. Climbed up to some caves but they were all too open for nesting. Saw another little gray tern, but could not get it. At the point of the island, about fifteen birds--red-tailed tropics--were circling and scolding. Finally they came low enough for me to drop one, whereupon the rest came down and I got two more, all with # 10 shot. Was unable to get a shot at the little white terns today where I could have picked them up. Nor could I call a cuckoo in the brush on my way down.

Drank a coconut's juicy contents and filled my shirt with oranges, of which three quickly were disposed of. Returned to ship about two-thirty, being last man in. Heaved anchor and put out to sea before four P. M. Not much breeze, but what there is, is favorable.

Stars were shining tonight, permitting sleeping on the topside. This morning, knowing that we would miss breakfast, I procured a tin of veal-loaf from the cupboard for the coffee table. This evening Mr. Beck set a can of jam on the table for a little desert. Now the cupboard is padlocked securely. To get the best we'll have to go forward and eat with the officers and crew. They said this night we finished the hard-tack.

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Perhaps now our lazy cook will make some sort of bread. Since Rapa, we have had taro on the table continually, which allows one to make out a meal. At Ravaivai we procured some fresh cabbage which went well with salt pork this evening. Though the pork was not cooked tender it flavored the cabbage at least.

April 27

Can still see the island but thirty miles distant, at the very most. A small gray tern was our only bird visitor this morning. The flopping of the mainsail seems to have ripped it during the night. It was pulled down early and is now under repairs. During the morning a good, stiff breeze sprung up, and we are now traveling along at better than five knots. Raoul has been busy all day building his cattle pens along either side the main deck. With fifty cattle and two dozen passengers we will have a good load from Tubuai in. Our birds just occupied the morning. I finished up the duck eggs, but one being full of dry yolk required considerable picking out. The tropic-bird egg is hatching; I warmed it up by breathing, in an attempt to help it out; then wrapped it in a sweater to hatch. One red-tailed tropic-bird visited us about noon.

A very heavy breeze, and rain in squalls came up towards evening, when just before dark several thought they saw Tupuai. Lay to for the night.

April 28

No land in sight, and its direction is entirely problematical.

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April 28

No land in sight, and the direction is entirely problematical.

An eight o'clock observation may help out. The Captain this morning blames the adverse wind now blowing to my shooting birds on Sunday. Perhaps that was the reason the hurricane blew at Rapa too. Failed to find the land by dark, so again lay to.

April 29

A stiff breeze came up at two A. M., but later proved to be but the precurser of a rainstorm. So our prospects of finding Tubuai today are very slim. We are not far away, however, as evidenced by a noddy tern, and at ten o'clock a bristle-thighed curlew which circled the ship several times. As the men will not work on Sunday, there is no possibility of our getting loaded and away before Tuesday. I hope they reach land today though, because that will give us more time to hunt rail and jungle fowl. Perhaps, however, I should not go out on Sunday, especially if the natives think such actions have any relation to the adverse weather. How anyone can believe such things is beyond my powers of conception. It is but a form of the superstition which made idolatry possible.

My tropic-bird has made no progress from his shell. This morning I warmed up the sweater with the coffee pot, and hope it will help him out.

Uru rimatara thrives well upon his fruit diet, and if he survives these three days I'll win five francs. Have decided to present him to Mrs. Beck who will be making a journey to the States in a few months and will be able to take him with her. Bananas are his favorite food, and the amount of them that he eats is amazing. Yesterday I fed him a mango which he seemed to

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thoroughly enjoy. His sharp little shriek has been a pleasure throughout the month. Whenever anyone approaches or passes his cage he squeaks at them. He is still a bit saucy when handled. His wing seems thoroughly healed up.

Several white terns seen during the day.

April 30

The morning broke clear, and the top of the Tupuai mountains were discernible to windward, which fact holds us away at least today; and unless more breeze comes up we will hardly make it tomorrow. As far as the ship is concerned, they could do nothing until Monday anyway. If it takes two days to load and three to reach Tahiti, we have at least one more week upon this expedition. This has allowed sufficient time to do considerable reading and letter writing, but during the past twenty days I have sadly neglected my study of the language. No noticeable effects are yet derived from attempting to learn it.

May 1

A good fresh sleep on deck last night, but I have had no company there since leaving Rapa. Last evening I was rewarded by a splendid exhibition of a meteor falling. At about that altitude which clouds commonly hold, 1600--2000 feet, it flashed up exceedingly brilliant with a bright bluish light. It seemed to plunge into the sea, but I heard no sound from it. For the moment it lasted, the neighborhood of its fall was lighted up as brilliant as a heavy flash of lightning would have done. During the night

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there were a few other shooting stars seen.

Although the breeze has been directly from the land, we have succeeded in tacking in until we have prospects of making anchor about noon. Stephen is to concentrate on jungle-fowl, while I will devote my time to searching for the rail.

Ashore after a late lunch. Up to Aitkins' and were greeted by a healthy "Hello" which sounded much better than when we left him. Mr. Beck is taking photographs, and I'm visiting with Aitkins until dinner time, when I go to the swamp which we crossed through while hunting ducks before. Had dinner with Aitkins,--some delicious honey he bought for a song.

Came out to that "wealth of ducks", but not a sound of them near here, the reason being that recent rains which have been heavy have filled all the marshes with water to such an extent that they do not need to resort here for food. Just heard a rail. Now for him! Crossed over to about where his call came from, and sat down "Whimpering" until darkness came to make even seeing a black rail an impossibility. Two or three ducks alighted while I was waiting, but it was too dark to shoot them, so I let them feed in peace. Heard no more of the rail. Returned and visited with Aitkins till bedtime.

May 2

At daylight this morning I went into the marsh, after a very chilly night without my blankets. I heard a rail immediately and so went forth with high hopes. But the rail that called (and I heard at least four from different directions) were not in the

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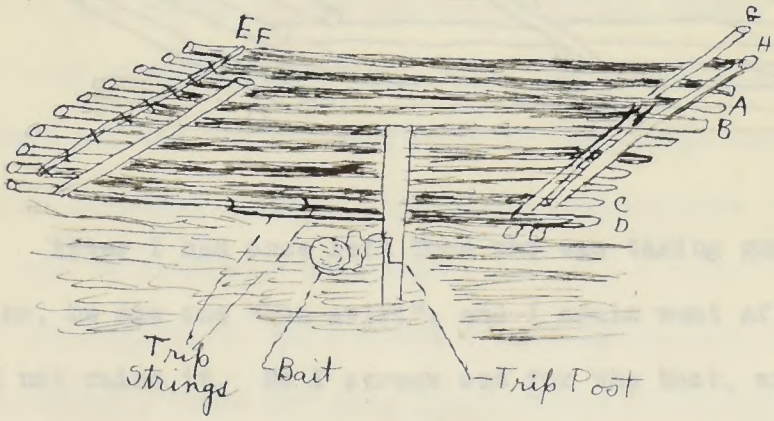
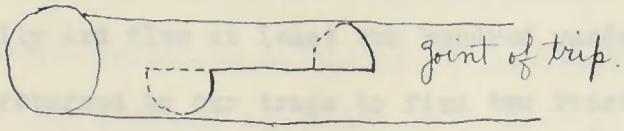
taro beds, but in a very rank tall weed. I selected the most promising places I could find and there did my calling without success until seven o'clock.

There were no ducks in the good hole as I passed it going in. Two or three flew over me during the morning's calling but I let them go. While breaking fast with Aitkins on honey and bread and tea with milk, Mr. Beck passed on his way to the field and urged me to bag a rail if possible. Tomati, my guide, showed up, and we came forth to search for rail until six o'clock, and then for wild chickens. Picked up four ducks at the second marsh, three sitting and one on the wing.

We flushed but one chicken in the woods, and since have been following along the edge where they come out to feed. Here we blundered and raised two without a shot. Came across a native trap as drawn below.





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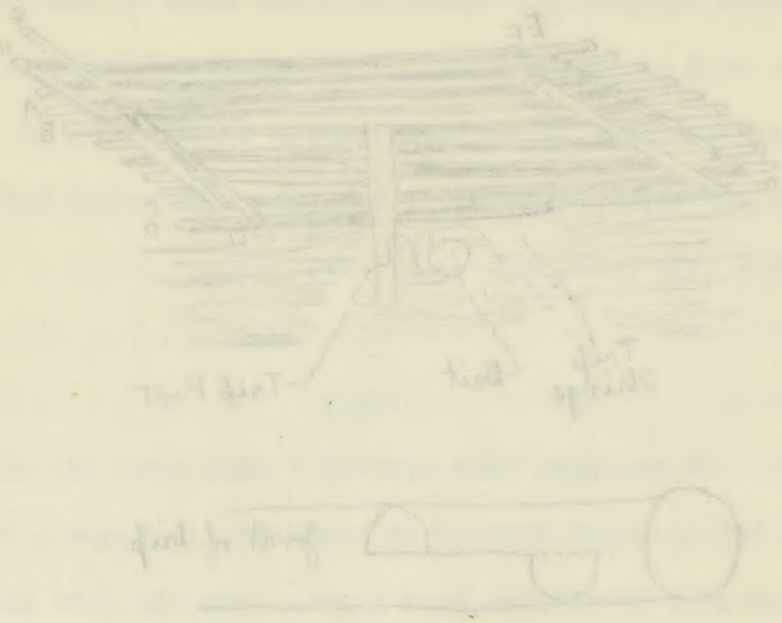
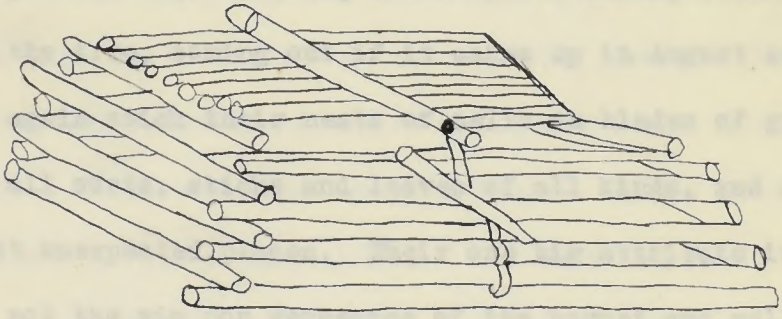


It consists of eight sticks arranged "hog-pen" style (A--H) covered with a layer of sticks and all securely bound with bark. The supporting trip is a jointed stick which supports the frame. It is tripped by the slightest touch of the two strings connected to it and passing on each side the bait, in this case a papiro. I have set my guide to building two more traps which we will set up here to revisit this evening; and the guide will return to them Wednesday morning.

My guide made a much better trap. No corner bindings, same trip, center pole binds the whole frame. This we set nearer some bags of papiros than the other. Then spent the afternoon vainly trying to get a shot at cuckoo or chicken. A hen and chick, very like the Tahitian ones in appearance.



After I had once left Toma who was taking gun and coat to Aitkins, he saw one "Moa aviri", and I again went after it, but could not raise it. So I struck out for the boat, and as I went past a house through a flock of tame chickens, one hen picked up gracefully and flew at least two hundred yards into the brush. We had returned to our traps to find two roosters under the new one. One was very plainly a barnyard variety, but the other Toma declared to be "Moa oviri". The one, when turned loose,

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calmly stood and looked us over. The other is a beautiful, glossy, black fellow with golden brown in the neck feathers, back and saddle, and a brown on the wings; small and light of body in comparison to his wings, which are full and large. But the two facts noted,--a tame and a wild rooster caught in the same trap, and a wild hen flying from a tame flock--show that considerable interbreeding is to be expected, and no pure species or variety is to be expected. Those from the upper forests might be more pure.

This island is the worst hornet nest we have yet struck. We passed through and rather close to several today, but fortunately received no introductions. May, June, July, and August are the months of a semi-hibernation of these wasps. When it gets cold in May they make houses in "Purau", hibiscus trees. If a warm wind comes, they come out, returning about five o'clock; cold days they remain in the tree, coming out if it warms up in August and September to again stick their nests of cells on blades of grass, bushes of all sorts, sticks and leaves of all kinds, and always in the most unexpected places. Their one big attribute is that they have not the vim nor vengeance of the hornet and yellowjacket of America. Wasp information obtained from natives. Often told to Aitkins. From Toma.

In regards to the cuckoos I have noted this. In Tahiti, Rurutu, Tubuai, there are myna birds rather plentiful. At those three islands the cuckoo has been very decidedly wary about being called by any imitation of his call. At Rimatara there were very few myna, but numerous warblers and parakeets; the cuckoo there would come when called, but was very wary once he saw me. At

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Ravaivai and Rapa where the myna was not present and few other land birds, the cuckoo called readily and was not at all wary about flying away after evidently seeing me. Has the myna so bewildered him that he is not curious when I try to give bird calls?

May 3

Came out at five-thirty when it was just light enough to see, and have been after rail ever since. They are here in fairly plentiful numbers, but apparently evade the open taro beds sticking closely to the swamps, especially where the characteristic succulent, weak-stemmed, though erect, weed grows thickest. Beneath this they were calling this morning at one time within two meters of me, but there was not the slightest chance of seeing just where they were. So far as we have been able to find out from inquiry and observation, these rail "Moho" have never been seen to fly. Finally I found some calling on either side a bed of tall taro. If these Tubuaians did not have the habit of elevating the beds six inches above the water, I feel that this would have been ideal rail hunting this morning. On the comparatively dry bed I took a position commanding a place where the rail might be coaxed out. Once or twice I heard him very near the edge, and once I thought I saw him and fired, but he wasn't there when I investigated closely. Next, I cleared out a small opening, and have through it a command of six meters, but nothing has come out into it. For half an hour their calling has ceased.

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island. One cuckoo, white terns, plenty of myna, and two or three flocks of ducks passed over me this morning. Now for breakfast, and then the chicken traps.

It was much farther out to the traps than I had expected. The old one had been sprung, while ours appeared to have been "robbed" and reset without bait. Along the road returning I obtained one cuckoo of three heard at different times.

Had duck for lunch at Aitkins', very good. Mr. Beck was there. I went aboard and skinned out the cuckoo. A tatler Mr. Beck had left was spoiled so badly that the feathers all slipped off, and as he had not skinned the other, we failed here to put up a record specimen of that bird. It was very gratifying to hear that Stephen had obtained one specimen of "Moho", the rail. He got it by a very long shot at something moving in the taro beds. He also informs us that the rooster I trapped is but a half-breed jungle-fowl.

We got away from port about five o'clock with the engine running fairly well, but unfortunately little wind to help us out. Our chances for the trades are slim this side Tahiti. The boat now smells quite decidedly like the old cow corral after the January thaw. The goats are somewhat crowded for space, but find room to settle down along the rail, or on chicken coops and bird cages. Fo'castle and cabin decks are crowded with passengers.

May 4

The engine was run until three A. M. this morning, which gave us sixty-five miles by the log which is rather optimistic in

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disposition and tries to keep our hopes up by over-registering about one-fourth of the actual distance. But with ten hours at the rate we traveled, which seemed well over five miles an hour, we should have made very near that run. Since the engine was stopped we have had an increasing breeze from the northeast, which has helped us along at two or three miles an hour. That is quite fast enough to get us within gas-reach of our destination, so that we can run in on the engine about Saturday.

Our boat is well loaded above the hold, which is itself somewhat full of cargo. We carry forty-six passengers, thirty-five cattle, one horse, about ten turkeys, several ducks and chickens, half a dozen goats and some pigs, and Uru rimatara who still thrives upon a fruit diet and showed good use of his wings when I put a string on his leg and exhibited him yesterday. But he is far from being gentle, and shook so with fear that I returned him to his cage.

White gygis terns and a yellow-billed tropic-bird were the only visitors this morning. After a spell of reading and snoozing, I came down and compiled the summary of our collections at the five islands visited. There were other birds present, such as tropics and terns and mynas and tatlers that we didn't get. We watched carefully for the plover at all islands. The reef-heron was not observed at Rapa, though we did not cover the whole island. The tatlers were still at Tubuai early in May, though some were flying high in flocks. A few frigate-birds were seen during the voyage. Two albatross, a curlew, and several shearwaters and petrels were observed from the ship.

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Summary of Collections.

	Rurutu (24)	Rimitara (130)	Tubuai (36)	Ravaivai (33)	Rapa (49)	Total (272)
Gallus sp.			1	Present		1
Ptilinopus huttoni					16	16
Porzana atra (?)	Reported	Reported	1	Reported not present	6	7
Pterodroma neglecta					12	12
P. solandri (?)					2	2
Fregetta grallaria					3	3
Gygis alba	5	5	4	1	1	16
Anous stolidus	3	3	2	5	2	15
Megalopterous melanogenys			5			5
Procelsterna cerulea	1			Present	1	2
Heteroscelus incanus	2	3	2	2	Present	9
Pluvialis dominicus fulvus	2					2

Summary of Collections.

	Hurutu (24)	Nukutavake (120)	Tumbai (26)	Mangareva (85)	Rapa (49)	Total (272)
Galiua sp.			1	Present		1
Pitilopus instoni					16	16
Porzana atra (?)	Reported	Reported	1	Reported not present	6	7
Ptorodroma magloeta					12	12
P. solandri (?)					2	2
Pregetta grallaria					3	3
Gygis alba	3	8	4	1	1	16
Anous stolidus	3	3	2	6	2	16
Megalopterous melanogaye			6			6
Procelsterna cerulea	1			Present	1	2
Heteroscelus incanus	2	3	2	2	Present	9
Nycalis dominicus fulva	2					2

Summary (cont.)

	Rurutu	Rimitara	Tubuai	Ravaivai	Rapa	Total
Demigretta sacra	11	3	3	11		28
Anas superciliosa	Reported	7	9	1	3	20
Phaethon rubricaudus	Present		1	4	1	6
Vini kuhli (?)		45				45
Acridotheres tristes (?)	Present	Present	3			3
Conopoderas sp.		60				60
Urodynamis t. taitensis	Present	4	5	9	2	20
Phaethon lepturus	Present		Reported	Present		

Summary (cont.)

	Nurse	Rimlets	Tubual	Revival	Hope	Total
Demigretta sacra	11	3	8	11		23
Anas superciliosa	Reported	7	9	1	3	20
Phaethon rubricauda	Present		1	4	1	6
Vini kuhli (?)		45				45
Acridotheres tristis (?)	Present	Present	3			3
Conopoderas sp.		60				60
Urodynamis t. taitensis	Present	4	3	9	2	20
Phaethon lepturus	Present		Reported	Present		

May 5

Threatened to becalm us today, but instead a good stiff northwest breeze came up, which lasted well through the night and carried us well within sight of Tahiti. Slept on deck in spite of probable rainstorm.

May 6

Many were up before daylight and thought they could see the island. The first impressive view was the tip of Orefena striking challengingly above the clouds.

We are now well in towards the mainland, with the end of the peninsula squarely off the starboard. Clouds are still hanging in the valleys and around the peaks. I hope the rainy season is over though, because I am going to Vaihiria next week if possible to get the guide, who must be Taufai.

Some boobies and terns were observed yesterday, and more today with a few shearwaters. When just off the Punuruu valley a small flock of noddies, white and yellow-billed terns were fishing where the fish were jumping in a close compact school. We entered the lagoon channel at the entrance just beyond the Punuruu valley, which saves going around the reef to the Papeete entrance.

Noticed several yellow-billed terns perched upon all the channel stakes and on several rocks protruding from the lagoon. We pulled right into the dock and were not detained at all from landing with all our possessions. Mr. Beck got a Chinaman and wagon. I rode down to the house with the load. We arrived before he did. Presented Uru rimitara to Mrs. Beck, and she seemed highly delighted with his beautiful coloring. To hotel and then a bath, but was too late to

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reach the post-office for stamps. Forty letters and the "Marama" sailing at ten tonight! But the chief engineer will take care of them for me at San Francisco.

There were tropic-birds soaring about the higher cliffs of the valleys in about their usual number. At the dock we were greeted by the usual chorus of myna, which was the first thing that we observed at our arrival last September.

May 7

The saucy myna birds still haunt the village streets and invade our dining porch to clear up the crumbs. They seem to be taking a rest or relapse from their ambitious endeavors to increase the avafauna of Tahiti. But I have not stopped long enough to note just at what stage their domestic life now is. The one thing I have noted already is that they are not holding as many family rows as they did in September. At the approach of a cat or dog they have a call of danger which is very characteristic and unmistakably recognizable. "Ăh-h-h! Ăh-h-h!" It is rather long drawn and tends to be gutteral and coarse, and somewhat jayish in sound. It is quite different to the call they give when I approach with the gun, when they utter a whistling note of warning.

In the afternoon Mamu, Mrs. Beck and I took an auto out to Faaa to see Taufai, our guide last October in the Punuruu. We had a little difficulty getting any of the native children lounging around to run up the hill and ask him to come down, but finally succeeded. He is ready and apparently quite pleased to make the trip. So we set the day at Tuesday, on the morning stage, Lac

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Vaihiria, via the river that drains it, being the first objective. Two weeks is the prospective time, during which we will search mostly for rail and shearwaters, and anything new or as yet not thoroughly collected.

Returned to Papeete and spent remainder of day getting things arranged. A torchlight celebration was held in honor of Jeanne d'Arc this evening, but I felt disinclined to celebrate.

May 8

Sunrise is after six o'clock here now. The weather is typically Papeete. At Maara I'll be able to form some idea of what to expect at Vaihiria. Lately it has been quite rainy out there, and today clouds hung low over the mountains.

Along the route were myna and weaver birds, along the shore yellow-billed terns and reef-herons. Four of the latter were perched on the roof of a small warehouse out at the end of a short wharf, and one in the wharf this morning. Two were inside the warehouse this afternoon. Heard the kingfisher while at Maara, a very interesting little friend we have missed during this voyage.

Had a splendid dinner at Maara at the end of the very brief three hours' visit. A long tiresome six hours of travel on a crowded rough truck for such a short visit seems hardly worth while, but when one has seen naught but brown-skinned,coarse-featured natives for four months, just one glimpse of a fair Anglo-Saxon maiden is worth a great deal more than even that long ride.

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until dinner time. On the dining porch I met Hall, Nordhoff, and Rowland who queried me concerning the Austral Islands and Rapa. I entertained them at length. Later, Knapp, the man of Taravao whose fame here is that he owns a monkey, joined us and cocktails were served for five, which number included the uninvited guest at the time holding the floor with Rapa narratives. It was a good cocktail, nicely served. After having imbibed it, the party proceeded to a dinner table lavishly set for six. I hung back, but Mr. Rowland asked me to join them. We had no less than seven courses: good soup, Russian salad, omelet, lobster salad, pork and mushrooms, chicken and French fried potatoes, asparagus, and ice cream and cake with red and white wine,--a very excellent meal indeed.

Towards the end of the evening the talk went toward idols, and then to collecting for museums, which was strongly denounced, even bird collecting. "Why is not a description sufficient?" they asked. Why should we hunt indefatigably for Porzana tahitiensis only to kill perhaps (?) the only specimen in the world of such a rare bird, make a skin of it to be once glanced at, perhaps by some moss-backed, gray-headed, bespeckled professor in New York, and then shoved into a case perhaps never to be again seen? Why not let it live to reproduce and multiply?

To the first, there is but one reply: we have now too many descriptions and no specimens to back them up; species have been set upon single specimens, when a series of several birds is necessary to determine species from more variations. They admitted that Darwin's theory of the Origin of Species had been of value, but that was conceived on a collecting trip, and without an

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May 9

Very sleepy this morning after our party, and was somewhat disappointed to find a trickle of rain dropping. Have been waiting at length for my eggs. Two mynas started to invade the porch this morning, but the cat decided to try for a position to catch them. They again uttered that "Ah!" which they use as a warning scold for cats and dogs. In a Stanford magazine this month was an article entitled "Looking Back from Thirty", which I am doing today. When a man becomes thirty, he should give some promise of success if ever he is going to succeed.

"Meho" is the Tahitian name for the rail here with the red eyes and legs.

enormous number of specimens for comparison could never have been proved as thoroughly as it was. The birds that are becoming extinct are not now rare because the porlaters collected in Cook's day, or because Peale and others, including ourselves, collected recently; they have grown rare because alien species were carelessly introduced and have destroyed them. At best, two men spending less than a week at an island cannot begin to find one per cent. of the birds except such as live in colonies, which are, in turn, usually wide-spread species. Local hunters kill more than we ever can because we never deplete colonies that we find, and couldn't entirely destroy wide-spread land birds if we tried to. The hawk and the myna, the rat, cat, and pig have no doubt destroyed Tahitian birds most noticeably in certain districts.

May 9

Very sleepy this morning after our party, and was somewhat disappointed to find a trickle of rain dropping. Have been waiting at length for my eggs. Two myna started to invade the porch this morning, but the cat decided to try for a position to catch them. They again uttered that "hut" which they use as a warning call for cats and dogs. In a Stanford magazine this month was an article entitled "looking Back from Thirty", which I am doing today. When a man becomes thirty, he should give some promise of success if ever he is going to succeed.

"Upho" is the Tahitian name for the rail here with the red eyes and legs.

Spent the day getting things ready to leave in the morning. This afternoon comes a letter from my guide, Taufai, saying he can not get away tomorrow, and apparently does not want to go until Monday next.

After dinner I went down to Mr. Beck's and we went over accounts. Decided that I should go out to Papehue and work the canyons beyond there for four days. Dropped in and spent two hours with Stimpson, at least one of which was devoted to a lesson on the fine points of distinction between apparently similar Tahitian words, and pronunciation of the aspirant or deleted consonant. Spent two more hours selecting a light equipment for this four-day trip.

Looking Back from Thirty!

What have I to account for my life?

1. Nothing worth while published.
2. Nothing especially accomplished.
3. An indebtedness of a few hundred dollars, shamefully neglected.
4. Considerable experience in knocking around.
5. A clean life, and a number of friends.

Hopa.

May 10

Up at 5:30 and down to meet the stage, though I might have taken life easy and waited for them at the hotel, for they went on up there anyway. Have all my outfit in a small valise,--the bird basket, my brand new tailor-made blouse (having completely worn out the old one), and the gun case. Light enough to move a kilometer

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Hope.

May 10

Up at 5:30 and down to meet the stage, though I might have taken life easy and waited for them at the hotel, for they went on up there anyway. Have all my outfit in a small valise,—the bird basket, my brand new tailor-made blouse (having completely worn out the old one), and the gun case. Light enough to move a kilometer

or more without waiting for the stage. This excursion will extend our survey of Tahiti considerably and will finish the district of Punuruu, and should complete Paea also. That will leave three districts characterised by long, deep canyons this side the Peninsula, half a dozen of them quite prominent, and a dozen smaller valleys large enough to have their streams on the map.

The main objective this journey is the swift. This bird was recorded from a ravine near Papehue, at which placé I shall commence working today. These birds we found more prominent at Hivaoa, Marquesas Group, than swallows, but here at Tahiti we have not yet found a trace of their existence. It is also hoped that the larger dove will be located in these outer districts. The birds I expect to find, however, are the common green dove and kingfisher, a few green heron and cuckoos, swallows, and jungle-fowl. The larger birds I will skin out and poison, but will not make up the skins until I return at the week-end. This saves carrying a lot of additional material. Small birds will be made up each evening. Whether I'll sleep up in the canyons or not I am undecided.

The stage stopped at the crossing of Papehue, but as there appeared to be no place to stay, I rode on to the next Chinaman's store, opposite the next valley Hopa on the map. Left most of my stuff there. Tried to pick up a boy or older guide, but failing, struck up the first valley trail above.

Mynas very thick and chattering loquaciously in the plantation at mouth of valley, at the edge of which a hawk passed. I had not expected to start shooting so soon, so was not

or more without waiting for the stage. This excursion will extend our survey of Tahiti considerably and will finish the district of Tamarua, and should complete Faea also. That will leave three districts characterized by long, deep canyons this side the Peninsula, half a dozen of them quite prominent, and a dozen smaller valleys large enough to have their streams on the map.

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loaded. The stream at the first ford is about three meters wide and not deep, boulders protruding from it everywhere. A few clouds and perhaps showers this afternoon.

Up the valley the first game was a dove, which, attracted by my cooing, came into the low trees overhead. I hastily changed a shell for the auxiliary barrel, but alas! I had brought along the new one which requires considerable grinding down before it will fit into the gun. I will have to try filing it tonight. After the dove had moved away a bit I shot below him with a ten, but a little too far below.

Not long afterwards, a prominent cliff rose up from the stream bed. There I looked carefully for signs of swift nests. Saw something quite blackish which greatly resembled a swift or swallow on a nest, though the nest itself was indistinct. There was but one thing to do, so I fired at it. It was nothing, but the firing brought out three swallows,all of which I succeeded in hitting, but one fell into thick brush so I obtained but two.

This valley thus far is mostly planted into bananas, with a few taro beds. The orange trees are just now commencing, and the purau forest grows thicker. Maupi trees along the stream bank. Myna still present but not so numerous. But a few doves have been heard calling, and only once have I heard Ruru, the kingfisher.

Rain commenced about ten. Beneath some bananas I stopped for shelter from the first shower. While sucking my hand to call cuckoos, I heard one answer, so called at length. Finally one flew overhead, followed by a small bird not a myna. Then I did call and the result was that the cuckoo escaped but I got a brown

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phase of the flycatcher. Proceeded up the valley until noon, when I stopped for lunch with a total of six flycatchers through each of the brown and black phases. I deem it wise to hasten back and take care of these birds and fix the auxiliary rather than continue hunting into a rainy day.

I shot three more black flycatchers on way back, but all of them fell into thick undergrowth and I was unable to find them. Took a trail which brought me out on left of Chinaman's, so I walked two meters before I realized my mistake. Returned along the beach to watch for a tatler because I have neither seen nor heard one since our return, but saw nothing save one heron. It was twenty minutes of three when I commenced skinning. I took half an hour to drink some tea and eat some bread and jam, with a magazine above corn meal and arsenic. Finished the eighth bird at 8:20, which was ten minutes over five hours for them,--rather slow for all the practice I've had, but since I steadily, though slowly, improve there are still hopes of my speeding up some yet. It was very interesting to find jet black females and some of the brown ones had sexual organs swelling. It rained quite heavily this afternoon, and I was contented to be indoors. I have a little room off the store and will probably camp here for three nights, working the two next canyons on either side tomorrow and the next day.

May 11

With a mat on a table here in the store I put in a fairly comfortable night. Whenever I awoke I could hear rain falling in

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considerable quantities. Throughout the night the Chinamen played cards, a sort of penny ante game played like stud poker, with the fourth and fifth cards laid face downward until after the betting that round. What their sequence is I do not know. The pot never amounted to much in real money, though being played with quarter and half franc paper notes it frequently looked big. The quarter franc was the ante, at the present exchange amounting to two cents.

Owing to the heavy rainfall of the night I am somewhat in a quandary as to my movements this morning. If it looks too threatening I shall probably catch the stage and ride out to the sugar mill at Fare and hunt rails in the marsh there. If not, I shall continue as planned to tour these ravines or canyons.

Obtained seven flycatchers although I ascended to an altitude of one thousand feet, where a waterfall in the narrow gorge checked my further progress. A few caves along the way, but no sign of swifts nor swallows, although I saw one swallow below the gorge. No trail at all to speak of and heavy rain all morning, but this gorge was worth the journey.

For some distance the stream has cut a very narrow gorge, in places less than three meters wide but averaging about five, with vertical or overhanging walls a hundred feet or so. Then a steep-walled, well-forested ravine above. Two mynas were the only birds observed in the gorge, but I got the flycatchers just below it and down as far as the general ravine timber extended. At the bottom of the gorge where it makes the first right angle bend, there is a slide with a trickle of water facing the main valley. Twenty-

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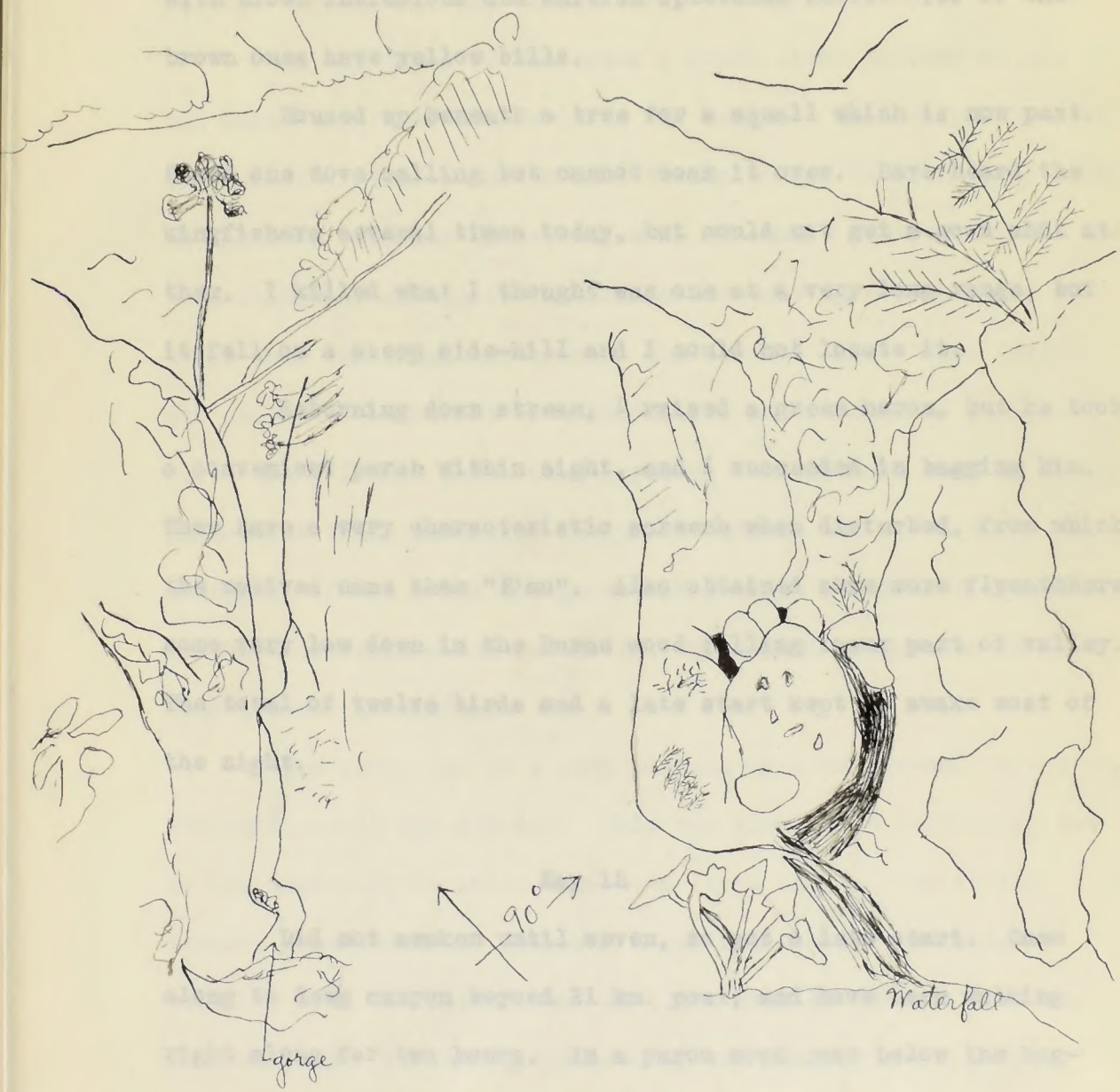
For some distance the stream has cut a very narrow gorge, in places less than three meters wide but averaging about five, with vertical or overhanging walls a hundred feet or so. Then a steep-walled, well-forested ravine above. Two wrens were the only birds observed in the gorge, but I got the flycatchers just below it and down as far as the general ravine timber extended. At the bottom of the gorge where it makes the first right angle bend, there is a glade with a trickle of water facing the main valley. Twenty-

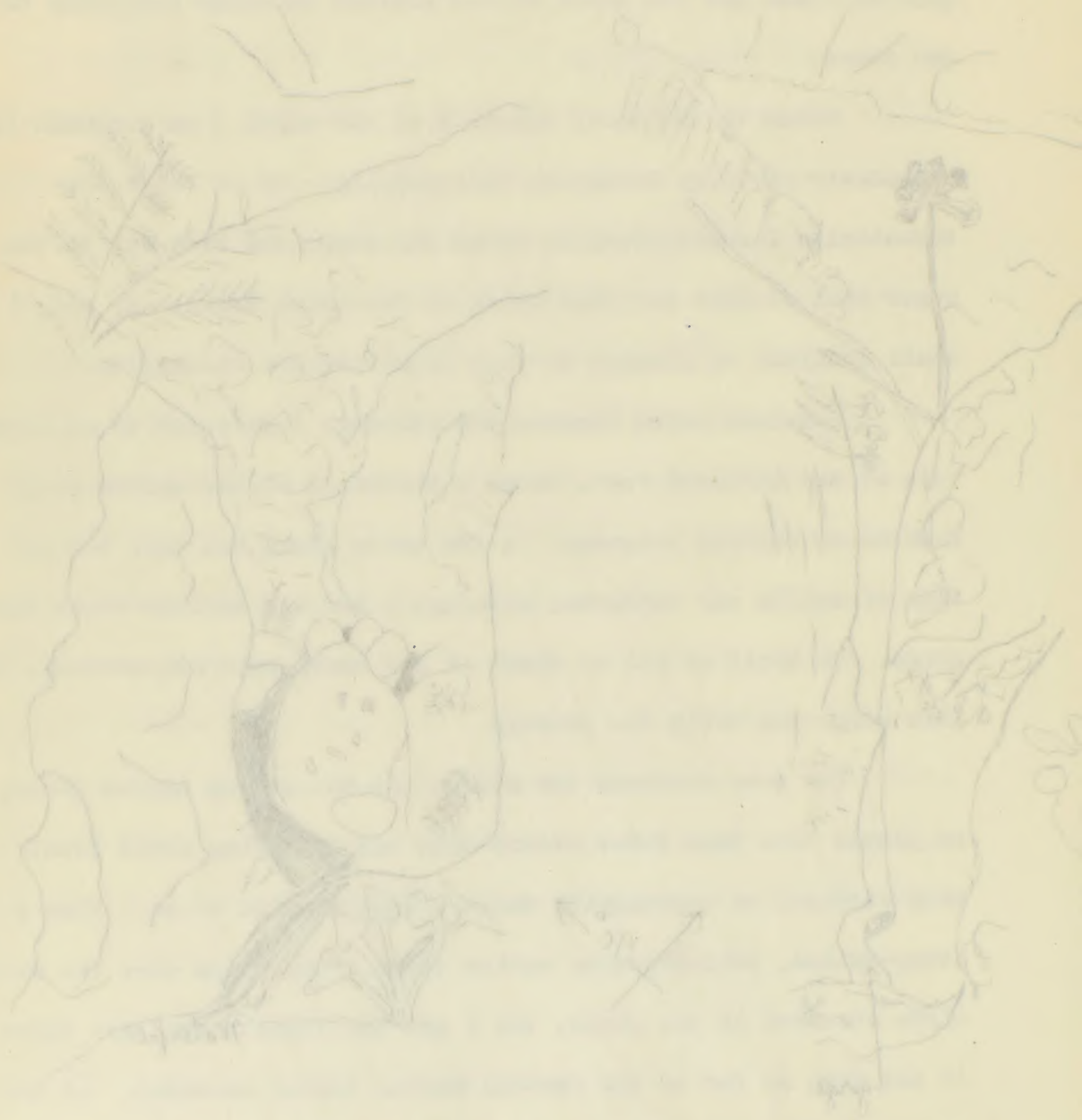
five minutes hike down,--elevation 850 feet.

I wonder why it always rains when I come into the interior? Descended to where the ravine widened out to a wide  with cliffs along either side high up.



five minutes hike down,--elevation 630 feet.

I wonder why it always rains when I come into the interior? Descended to where the trails widened out to a wide V with cliffs along either side high up.



There out from a cliff were three small black birds, which might possibly have been swifts, but I judged them to be swallows. However, I climbed up to see, but since arriving at the face of the cliff and following it along for two ravines, I have seen nothing of them. I obtained one more flycatcher, which makes four black and four brown. One of the black ones is a motley of black with brown intrusions and whitish splotches below. Two of the brown ones have yellow bills.

Housed up beneath a tree for a squall which is now past. Heard one dove calling but cannot coax it over. Have heard the kingfishers several times today, but could not get a good shot at them. I killed what I thought was one at a very long range, but it fell on a steep side-hill and I could not locate it.

Returning down stream, I raised a green heron, but he took a convenient perch within sight, and I succeeded in bagging him. They have a very characteristic screech when disturbed, from which the natives name them "E'au". Also obtained some more flycatchers, some very low down in the Rurau wood filling lower part of valley. The total of twelve birds and a late start kept me awake most of the night.

May 12

Did not awaken until seven, so got a late start. Came along to deep canyon beyond 21 km. post, and have been walking right along for two hours. In a purom wood just below the hog-pasture ford I obtained four flycatchers. A native at the hog-pen said the Amamo (swallows) and "mero" (perhaps swifts) are

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At the forks of the creek a green heron scolded at me, but being unable to detect it in the trees, I was obliged to shoot to scare it. Then I had to wait for it to get decently away from me and tree branches interfered with my shot. The trail which had been following alongside the stream-bed went up over a point of rock, then descended and crossed the stream. Above this ford I was unable to locate it on either side, so returned to study it out. Had I looked about when fording, I would have seen it a very pronounced trail ascending the point between the two forks. The steepness of the grade was quite fatiguing. I rested frequently, and while resting cooed for doves. Succeeded in getting several. Myna present in numbers.

The trail led to a semi-plateau with candle-nut tree predominant,--tall and slender. This was ideal dove territory, but it was necessary to shoot them with large shells. My firing aroused some chickens. Hearing a hen and rooster cackling, I tried to find the latter, but as I got near he quieted down and sneaked away. There obtained one of two kingfishers. A myna, I'm almost sure, gave a trilling call which sounded like a new bird. I searched in vain for the caller.

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Proceeding up the trail I heard and then saw two chickens running from me. The hen took to a tree, so I followed until the rooster also treed. Got a beautiful shot at him and killed him. He appears to be a tame chicken gone wild, perhaps crossed. He is gray, black breasted, and tailed with whitish upper and wing feathers. A large and beautiful rooster. The hen was more brownish. The dove hunting here was excellent. With doves flitting about overhead and chickens crowing in the jungle, I could not resist the temptation to hunt on until it was too late to return.

I then proceeded to a good clump of fei, which I found interspersed with orange and other trees. Spread three or four large green leaves over the damp ground between two trees, piled dry fei leaves a foot deep on them, tied a pole between the two trees about thirty inches high, and then with the largest leaves I could find made a low, small pup-tent which so far promises to be very comfortable. Am very sleepy for want of rest last night.

Put out the candle and turned in. The dry banana or fei leaves were very comfortable until my moving around pressed them down; then considerable draught struck me. A little more painstaking work to cover the foot end of my shelter wind tight would have been well, for it is open enough to let in a little cool air, and a newspaper is hard to keep in place about one's feet as one turns from side to side. I opened up the newspapers that I had along and used them for covering. It is not so very cold because my shelter is low and windproof except at the ends.

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May 13

A rather heavy and long-continued shower came up shortly after I quit writing last night. It was very gratifying to find that very few drops found their way into my house. One or two struck me about the face, and once I awoke to find my throat quite moist externally.

Throughout the night since the rain stopped I have heard rats nibbling in the trees. No other sound save the distant roar of the river reaches me. Yesterday a few tropic-birds were seen about the cliffs above. The strangest thing about this valley is that the flycatchers were apparently confined to the wooded area just below the hog-pasture. Although I called all along the route, I neither heard nor saw anything of them. Our one other specimen from the Papenoo Valley was taken at an altitude of two thousand feet, these at two hundred. It may be possible that they migrate to the higher elevations for the summer and retreat downward in the winter, but further collecting is necessary to prove this. The purau (hibiscus) woods seem especially adapted to insectivorous birds. Flies, gnats, and other insects abound in them.

Descending down the trail this morning, my dream came true, for I dreamed last night that I had got into the midst of a flock of chickens and that they fell in every direction. Half a dozen fled down the trail ahead of me. I gave them both barrels and then went after the one or two that escaped, but they had taken to the tree tops and refused to let me approach or see them. There were four hens flapping their last when I returned. They were light brownish in color with considerable gray in the neck. The rooster with them, which escaped, was apparently of the same

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color as the one I got yesterday.

The doves refused to answer my calling (except one) and few were feeding in the trees where they were so plentiful last evening. Just above the river I met five natives headed for their weekly harvest of fei. But eight o'clock then, how did they make it so far that early in the morning? Although I tried several times, there was not a sign of flycatchers until I got below the pig pen, when I obtained one of three seen at the same place the four were obtained yesterday. Heard a cuckoo there and let a flycatcher flit about overhead for several minutes for fear of scaring the rarer bird by shooting. It is decidedly difficult to call them where the myna is present.

Here at the Chinaman's is a tame chicken which has twice attempted to pick up some wasps which, while fighting, fall to the ground. It was noon ere I reached here, and being somewhat hungry I cleaned up the remainder of my grub. Drew the chickens, the rooster being pretty strong already, and the hens being shot from behind were apt to spoil soon. The five birds dressed would sell at Papeete for four dollars. Their bodies will, I think, make a good meal for someone, now they are drawn. The wasps were not fighting but mating. Two alighted on the porch near me. The female is larger than the male.

Father Rougion says that the young <u>Phaethon rubricaudus</u> when once they fly away go alone and are never seen again in juvenile plumage. He raised some in captivity. They ate a pound of fish a day. Finally they appeared sick, quit eating for two weeks, and then flew away never returning. Frigate-birds were used in (Endley, Museum of Sydney) Gilbert Islands to carry mail

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from one island to another.

Mr. Beck was down town and did not return early enough to do many birds. The mail had arrived during my absence. No news yet concerning the lost boxes of Tahiti specimens, which have not yet been received at San Francisco.

May 14

Spent day on birds. Taufai was in town, and so I arranged for Vaihiria trip Monday. Took him down to Beck's and showed him his picture in the Museum Journal, which tickled him to death. Mr. Beck gave him a couple of pictures taken in Punuruu trip. We showed him several birds, and in that way discovered that the warbler was in the Punuruu, but not the flycatcher. He knows nothing concerning petrels. He was quite interested in the birds.

May 15

Spent day at hotel visiting with Americans and British there. They are quite interested in the way we knock around this country. Well, so am I. Have taken to eating with Hall on the front alcove.

May 16

Vaihiria

Potate and I are here at the stage and have our reservations. Now all depends on Taufai's connecting with us at Faaa. While he was at Beck's Saturday with a horse and buggy, I put the gun, my jacket and bag in his vehicle, and told him (as best I

from one island to another.

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May 16

Vaihiria

Potato and I are here at the stage and have our reservations. Now all depends on Tautel's connecting with us at Fare. While he was at Beck's Saturday with a horse and buggy, I put the gun, my jacket and bag in his vehicle, and told him (as best I

could) to take them to Hotel Tiare. Apparently he has taken them to Faaa with him. Of course, he'll have them at the stage road with him,--a little blunder that might create trouble.

But he was there with everything, so now I have the grip to pack birds in, which is well because it is about large enough to hold shearwaters. At first I tackled filling my jacket pocket and making one of those awkward back packs we are addicted to in America; but here at the first ford I have adopted the Tahitian pole, which may gall my shoulder a little at first, but it certainly is the easiest way to carry the same size of a load.

At the fourth ford, Taufai, unlimited strong man, has relieved me of half my pack, and his must now be ten times mine in weight. Marvel of sinews and brawn! How does he do it? But we will make better progress now that I have but twenty pounds or so and he has two hundred. If anything will take the conceit out of a person such an example of manliness should. What a pleasure it is to work with such a man! He is worth more than all three of the Papenoo boys who came down this trail with me last December, and cost less than two of them. Furthermore, he will keep camp supplied with edible products of stream and forest and will hunt shearwaters like a bloodhound after bear. The change was certainly a relief, and I felt much more like keeping my eyes open and watching ahead of me after he took the load.

At the eighth ford we stopped for lunch. This valley is cultivated high up for bananas, and some new clearings appear above the twelfth ford. I believe this is the most frequently forded of all Tahitian streams, which will probably give it the

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At the eighth ford we stopped for lunch. This valley is cultivated high up for bananas, and some new clearings appear above the twelfth ford. I believe this is the most frequently forded of all Tahitian streams, which will probably give it the

world's record. Above the sixteenth Potate spied a green dove eating. So he has one bird to his credit if they find it, for it flew off a hundred meters before coming to earth. They couldn't find him, and neither could I. A green heron took wing and went over my head safely enough, for I missed him, and proceeded down stream squeaking. Myna still with us. Hawks and yellow-bill tropic along the ridges above.

The twenty-sixth ford is the one which was too swift for my understanding. There the river cuts into a cliff after rushing madly over some rocks. The narrowness of the stream--less than five meters,- alone saved me from being carried into the hole along the cliff. Now the stream is but slightly more than knee deep in most of the fords, but during that flood in December it struck my arm pits.

At the twenty-eighth ford we stopped. The men set to work to build a house while I returned to follow up the little stream flowing in from the southeast, where it can be seen flowing down the face of the steep hill. Am now in a dense growth of the tall liliaceous plant, in which I should imagine rails would dwell. But not a sign of them have I seen.

Before I left I covered up the packs, for it looks like rain, being well clouded over. It was quite all I could do to budge the load Taufai carried, nearer two hundred pounds than one hundred. Potate's is at least fifty, while I came like a king with but twenty of thirty. We passed a young lad at the mouth of the canyon taking out a basket and a sack full of oranges. He

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must have been carrying no less than seven dozen. Boys that age are stronger than I.

We have been for half an hour without a sign of life in this growth of stalky lillies. Ascended the little stream to the base of the very dainty waterfall which itself cannot be seen from the canyon below, although the sheer wall continuing the pocket is in evidence from there. The wall over which this little stream flows looks to me to be at least fifty meters high, and composed of horizontal layers of lava. Where water is falling and trickling, vegetation is scarce save for algae and small moss, but wherever it is not, the ferns have secured a strong foothold.

Myna are the only signs of bird life here. A nice bunch of ripe fei grow nearby, so I'll take them back to camp and continue searching below for Porzana tahitiensis, "Meho", here. The waterfall creates considerable draught down here, and as the steep walls shade it in, it is quite chilly on wet legs. Tree ferns are not yet in evidence, but the enormous-fronded, large stumped ones are here.

Proceeded down to camp and thence up stream to next ford, but saw nor heard nothing of birds. The house was well built; fei leaves were the first layer, and "opui", the tall, liliaceous weed was used thickly above. The men came to an orange tree across stream from me. Potate attempted to cut off a small branch heavily laden. The oranges falling into the stream, I suggested that they shake a lot down and that I would beat it for camp and pick them out of the river there. It was good sport, but certainly kept me busy.

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Proceeded down to camp and thence up stream to next fork, but saw nor heard nothing of birds. The house was well built; fat leaves were the first layer, and "ogni", the tall, lilaceous weed was used thickly above. The man came to an orange tree across stream from me. Potato attempted to cut off a small branch heavily laden. The oranges falling into the stream, I suggested that they shake a lot down and that I would beat it for camp and pick them out of the river there. It was good sport, but certainly kept me busy.

A birdless day, but poor shooting alone is the excuse for a dove and green heron escaping. My new jacket started to rip at the back of the neck today, owing to the load I carried in it; so this evening I spent sewing it up and strengthening it with the small pocket off the old jacket. Broke two needles at the job and was somewhat disconcerted about the accidents, for it left me needleless. But fortunately I had a dividing needle that was of home make; and sure enough! the point was a common needle with the head end shoved into the cedar stick.

For dinner we had the good fei I brought in, with some beef stew, rice-currant pudding and tea. With plenty of fei, bread is not essential. I think my grub stake will last nearly a month because we are not entirely dependent upon it. The river here is too noisy to permit hearing whether or not "Noha" is plentiful above. A beautiful night with the camp full of glorious moonlight.

May 17

Myna birds are frequently crossing the canyon above, but nothing else detected. We did not get an early start, mostly because the fire was tremendously slow for breakfast. We are still fording back and forth across the stream, and occasionally traveling up it just below one bank. At one rest, Taufai thought he saw a "Meho", so I crossed over and gave the place, which was excellent rail territory, a thorough search. While I was over there a hawk went past the men. I failed to find anything. This canyon strikes me as being one continuous series of ideal "rail"

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For dinner we had the good fat I brought in, with some beef stew, rice-currant pudding and tea. With plenty of fat, bread is not essential. I think my grub stake will last nearly a month because we are not entirely dependent upon it. The river here is too noisy to permit hearing whether or not "Mike" is plentiful above. A beautiful night with the camp full of glorious moonlight.

May 17

Wild birds are frequently crossing the canyon above, but nothing else detected. We did not get an early start, mostly because the fire was tremendously slow for breakfast. We are still fording back and forth across the stream, and occasionally travelling up it just below one bank. At one rest, Tawfat thought he saw a "Mabo", so I crossed over and gave the place, which was excellent trail territory, a thorough search. While I was over there a hawk went past the men. I failed to find anything. This canyon strikes me as being one continuous series of ideal "trail"

brakes. Some horses, however, are feeding off the rank weeds in places, which may interfere a little with them.

Above the forty-second ford we are resting. I have started Potate to catching lizards and have instructed him to fill the bottle this trip. The one here in the tall "opui" weed has a very long,slender,blue tail.

Potate was falling behind so much that I again stopped just before the forty-fourth ford, and here we lunched on bologna sausage and soda crackers. Potate having thrown away enough "pudding" to have fed us well, I decided to let it sink in deeply that he shouldn't waste food. We still have perhaps half a dozen fords to make before we ascend the steep grade to Bo's'n rock, which places us on the Vaihiria plateau. A hawk came winging up the valley while we were reclining here. He saw us and turned back, but a little better marksmanship should have dropped him. The dominant life here is insects, wasps, gnats, and dragon-flies which can be seen in considerable numbers in the sunshine. No bird life noticeable, even up the wooded canyon slopes.

Just before the fifty-second ford, I lost faith in my knowledge of the trail, and threw suspicion into the whole outfit. Taufai unfortunately has likewise forgotten just where the trail takes to the side of this gorge to ascend the lake plateau. We tried what looked as if it might possibly be the route, but found only the trail of a fei hunter, for one cutting of opui alone was evident. Taufai went on around the ridge to look ahead, the boy and I returning to our packs. Saw two swallows flying about a ridge down the valley. One later ventured near, and I brought her

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Above the forty-second ford we are resting. I have started Potato to catching lizards and have instructed him to fill the bottle this trip. The one here in the tall "opal" weed has a very long,slender,blue tail.

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down. Taufai did not return for some time, having gone high up to look the situation over, but apparently he saw nothing of the lake. I was skinning the swallow when he returned. It was then so late that we just had time to make camp where we were. I think I heard some rail pipe once or twice, but they did not trill.

Vaihiria

May 18

Beautifully moonlight last night. We should have heard "Noha" calling, but perhaps the river is still too noisy. I brought out the map and discovered that Taufai apparently does not savy the Hitiva district. Our time is not going to produce any noticeable results in the numbers of birds obtained, but I have great hopes yet of finding the rails in the marsh above the lake, where we will camp at least tomorrow night. Hope to reach the lake and get a raft built today. It seems that Taufai has not brought his fishing material, so we will be obliged to manufacture a hook to catch eels with. Hopes for pigs are somewhat scarce. There may be jungle-fowl on the plateau above the lake where I expect to do some hunting after getting plenty of traps out for rail.

Where the heavy water-weed grows no sign of a trail is to be found. Not yet being a good Tahitian, although I have traveled barefooted one full day now, I avoid the stream bed as much as possible. This led me to a semi-trail through the tall "opui", from whence I proceeded to whack an exit up valley. After several meters, perhaps a hundred, I found the real trail emerging from

down. Tauvel did not return for some time, having gone high up to look the situation over, but apparently no new nothing of the lake. I was admiring the swallow when he returned. It was then so late that we just had time to make camp where we were. I think I heard some rail pipe once or twice, but they did not trill.

Tahiti

May 18

Beautifully moonlight last night. We should have heard "Kona" calling, but perhaps the river is still too noisy. I brought out the map and discovered that Tauvel apparently does not navy the Hitiva district. Our time is not going to produce any noticeable results in the numbers of birds obtained, but I have great hopes yet of finding the rails in the marsh above the lake, where we will camp at least tomorrow night. Hope to reach the lake and get a raft built today. It seems that Tauvel has not brought his fishing material, so we will be obliged to manufacture a hook to catch bait with. Hopes for pigs are somewhat scarce. There may be jungle-fowl on the plateau above the lake where I expect to do some hunting after getting plenty of traps out for rail.

Where the heavy water-weed grows no sign of a trail is to be found. Not yet being a good Tahitian, although I have travelled barefooted one full day now, I avoid the stream bed as much as possible. This led me to a semi-trail through the tail "opui", from where I proceeded to wonder up and up valley. After several meters, perhaps a hundred, I found the real trail emerging from

the creek. A swallow flitted about above the weeds, but I could not get a shot at him. We are now within view and a few hundred meters of the real ascent to the Lac Plateau. Rather cloudy and occasional rain, but I think I have everything well packed today, Potate's load being one of non-perishables so that if he again sits down in the stream nothing important will get wet. Shot an eel at fifty-second crossing.

My detour avoided several fordings and there were but a couple more except the grand finale which took up the stream-bed itself. This led to those numerous gushing fountains where the spreading creek emerges from the rocky wall separating the valley from the lake above. I regret the necessity which obliged me to keep the barometer packed away from the rain, but estimate a climb of at least two hundred feet above last night's lodging, or near one thousand feet elevation where the stream emerges. Here, again, my lack of faith and observation turned me back just in time to miss the well defined trail leading upwards to the plateau, and we searched high and low just up the next slope from the ravine separating, until Taufai located the way. It was a steep climb. I relieved Potate of the ten kilograms of sugar and about an equal weight of shells, which gave me about forty pounds in the two hunting jackets. Several rests were quite necessary.

The trail has not been used for some time, and the rank growth of the water-weed and reed required almost continuous use of the "stipi" until the top of the ridge was reached. The descent was almost entirely through rank water-weed, which we wallowed down ahead of us. Here we have been three days making a distance sup-

the creek. A swallow flitted about above the weeds, but I could not get a shot at him. We are now within view and a few hundred metres of the trail ascent to the Lac Flatteau. Rather cloudy and occasional rain, but I think I have everything well packed today. Potato's load being one of non-portionables so that if he again sits down in the stream nothing important will get wet. Shot an owl at fifty-second crossing.

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posed to be made in half a day. This slow time was due mostly to the unused condition of the trail and the necessity of considerable clearing, which, together with twice searching at length for the trail, has delayed us terribly.

This last day has been practically birdless. One kingfisher was observed along the stream, and one was heard just before reaching the lake. Swallows held the day, being occasionally observed, and two were taken at the lake. But towards evening I again heard from the canyon wall that same call which dumbfounded me last December. It is unlike anything I have yet heard,--a monotone whistle of one note, not very frequently repeated. At about six-thirty, shearwaters commenced calling from the ridges, enough to suggest that they are more plentiful than last summer, but just where over that stretch of mountain ridges are they? The piping of rails could also be heard just prior to darkness.

The chief item of interest, however, is the rain. All day it rained in spells so that we were well drenched most of the time. Wallowing through the weeds alone would have accomplished that. After retiring upon a layer of leaves above old ones which appeared dry enough, we found our blankets for a short while comfortable. It was just midnight when I awoke with the sensation of being wet. Either the moisture on the leaves was sufficient, or else the rain drained down hill beneath us. Since perhaps eight o'clock it has rained steadily and considerably. We have tried an additional mattressing of the water-weeds used above the oven wherein we cooked fei, opui, and some baking-powder bread (not bad, and sort of like dumplings). It is still raining heavily, and perhaps will

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keep up the record of ten days of twelve while we are in here. We have managed to find a place where some of our things can be kept dry by the use of the slicker to turn roof drippings from the rocks above. We are using the same cave where the boys and I stopped last trip. Here I found the rum bottle left secluded there with a spoonful or two of rum, but none of us are inclined to use it, even though wet and chilly.

At Vaihiria Lake.

May 19

This morning Taufai grew tired of his bed puddle early, so arose and started the fire. We got up later and had breakfast. We wrung considerable water out of the under blanket. There were two things well soaked, a bag of ammunition and one of beans. There is quite a blustery wind today, with squalls of rain. As the wind is blowing directly down the lake, we will probably not tackle swimming against it. The boys have gone to a fei grove near the lake shore to build the raft which will at least be ready for tomorrow. Two hawks flew about the canyon wall opposite us this morning, but refused to be enticed this way.

It was such a rainy spell as this which filled the Vaihiria River to the swimming point last December. There is that much to be thankful for, that we are not fording the stream five or six times every kilometer. No wonder that this canyon is predominantly verdant; with such continuous rain and growing weather all the year round, every bit of available foothold is utilized by plant life. Only a few of the most perpendicular precipices are barren, and the

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At Valdirin Lake.

May 19

This morning Daniel grew tired of his bed puddle early, so arose and started the fire. We got up later and had breakfast. We wrung considerable water out of the under blanket. There were two things well soaked, a bag of ammunition and one of beans. There is quite a blustery wind today, with squalls of rain. As the wind is blowing directly down the lake, we will probably not tackle swimming against it. The boys have gone to a fel grove near the lake shore to build the raft which will at least be ready for tomorrow. Two hawks flew about the canyon wall opposite us this morning, but refused to be enticed this way.

It was such a rainy spell as this which filled the Valdirin River to the swimming point last December. There is that much to be thankful for, that we are not fording the stream five or six times every kilometer. To wonder that this canyon is predominantly verdant; with such continuous rain and growing weather all the year round, every bit of available foothold is utilized by plant life. Only a few of the most peripatetical prodigious are narrow, and the

many places where numerous waterfalls, silvery cataracts during rains like this, plunge madly down to the lake below. From here, looking across the lake, one sees, beyond, a great semi-circular wall composed of successive layers of perpendicular cliffs with verdant shelves separating them. Over these the cataracts are very numerous indeed, the larger and uppermost cliff being practically a sheet of falling water throughout its entire extent. If Tetufera, the mountain to the left of the lake, is 5800 feet high, I would estimate the one to the right at least 4800 feet, which would put it more than three thousand above the lake. The dominant feature, however, is the clothing of green over everything. The vegetation is dominantly ferns and mosses, but many beds or groves of plantain are to be seen with their crown of broad fronds; tree ferns are quite common on the higher slopes. But all seems well filled in with the vine-pandanus like "ieie", and the fresh green water-weed so common here.

This morning I skinned out the two swallows, and kept fire burning to dry out our bedding. The men returned about noon across the lake on an excellent raft. They brought three bundles of fei with them, and these we added to our lunch of oatmeal and chocolate. I also kept a pot of beans boiling this morning.

A hawk alighted on a dead tree above a slight pinnacle of rock not far away from the incoming trail. I took the boy and a sack and went after him. (The boy and the sack to get oranges near there, not for any proverbial snipe hunt, though I fear we'll have to apply such tactics for "Meho".) We got alongside of the pinnacle and then, keeping under cover, called Falco from his

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A hawk alighted on a dead tree above a slight promontory took not far away from the incoming trail. I took the boy and a sack and went after him. (The boy and the sack to get oranges near there, not for any proverbial antipathy, though I fear we'll have to apply such tactics for "Hawk".) We got alongside of the promontory and then, keeping under cover, called falco from his

perch by imitating small birds and squeaking rats. I shot the first time as he swung away, fearing he would not come closer, and missed him. Then he whirled and flew well within range, but I think I led him too far. So poor marksmanship must again be the excuse for a birdless day. The rain continued until four o'clock, and consequently it was hopeless to even hope for birds. After getting three or four dozen oranges we returned to camp, but paused along the lake shore at length to look for rail runs. Found no signs.

Taufai built us a bed well above puddles of water for tonight, but alas! our blankets will have to finish drying by our body heat. A cup of good, rich chocolate went well today. We have commenced to live upon fei, and if I can keep my resolution to stick until we find "Meho" we will probably be living entirely upon them. Our fortune to have a hook and line for eels is going to work disastrously unless Taufai can make a good enough hook with some raft wire I have along. My two days barefooted traveling have resulted in four bruised ankles and four sore interstices betwixt lesser toes. Verily, I'm no Tahitian yet. I foolishly poured iodine into the sore interstices, and surely suffered the consequences,--as bad as a wet compress of iodine.

There is at least one rail on this side the lake, for he has piped a couple of times or so already. Potate and I tried a lane, but the roads beneath the water-weed "Maapape" are so very rough there are no hopes of a decent lane cut here. Tomorrow morning we cross the lake and set out traps and hunt the creeks

perch by instilling small nitro and epsomedog pills. I shot the first time as he swung away, fearing he would get some sinker, and missed him. Then he quickled and flew well within range, but I think I led him too far. So poor sportsmanship must again be the excuse for a bloodless day. The rain continued until four o'clock, and consequently it was hopeless to even hope for birds. After getting three or four dozen oranges we returned to camp, but passed along the lake shore at length to look for rail runs. Found no signs.

Tawfat built us a bed well above puddles of water for to-night, but alas! our blankets will have to finish drying by our body heat. A cup of good, rich chocolate went well today. We have commenced to live upon tea, and if I can keep my resolution to stick until we find "Bobo" we will probably be living entirely upon them. Our fortune to have a hook and line for bass is going to work disastrously unless Tawfat can make a good sponge hook with some rail wire I have along. My two days barefooted travelling have resulted in four bruised ankles and four sore interstices twixt lesser toes. Verily, I'm no Zahilian yet. I foolishly poured iodine into the sore interstices, and surely suffered the consequences,--as bad as a wet compress of iodine.

There is at least one rail on this side the lake, for he has piped a couple of times or so already. Potato and I tried a lane, but the roads beneath the water-weed "Sargaque" are so very rough there are no hopes of a decent lane out here. Therefore morning we cross the lake and get out traps and hunt the creeks

for the rail until we find him or run completely out of food, and fei are still plentiful about here.

Heard little of rails this evening, but a piping or two. The stranger called out not at all. Ruru was the chief entertainer, trilling many times. About seven o'clock, the "Noha", shearwaters, flying into their nests on the ridges above, commenced their long-drawn, two-noted whistle. They were not numerous, but frequent throughout the early night as long as I was awake. The question is, just where on the face of that steep slope above are the burrows? We will try at length for them on the divide between here and the Papenoo. There were no strange six-notes detectable from this distance, but a sleep upon the ridge might reveal something of interest. Taufai suggested living upon fei until we found "Meho", which is just what I intend to do.

Our blankets being fairly dry and our bed well elevated above the puddles, we are promised a little comfort tonight, in spite of a few drippings from the roof between which there is hardly room for us.

May 20

When awake during the very early hours of morning, I could hear the shearwaters on their way seaward, apparently more numerous than last evening, and enough to give hopes of success in that line. I was awakened just after daylight by the stranger, but he ceased calling and never repeated, so I still am unable to locate or recognize him. Could it be the gallinule which Forster found? If the rail still exists here in this well-weeded valley, is it

for the rail until we find him or run completely out of food, and yet are still plentiful about here.

Heard little or talk this evening, but a piping or two. The stranger called out not at all. Hour was the older entertainer, trilling many times. About seven o'clock, the "Kobe", shearwaters, flying into their nests on the ridges above, commenced their long-drawn, two-noted whistle. They were not numerous, but frequent throughout the early night as long as I was awake. The question is, just where on the face of that steep slope above are the burrows? We will try at length for them on the divide between Hare and the Papenoo. There were no strange six-notes detectable from this distance, but a sleep upon the ridge might reveal something of interest. Hewitt suggested living upon fat until we found "Kobe", which is just what I intend to do.

Our blankets being fairly dry and our bed well elevated above the puddles, we are promised a little comfort tonight, in spite of a few drippings from the roof between which there is hardly room for us.

May 20

When awake during the very early hours of morning, I could hear the shearwaters on their way seaward, apparently more numerous than last evening, and enough to give hopes of success in that line. I was awakened just after daylight by the stranger, but he ceased calling and never repeated, so I still am unable to locate or recognize him. Could it be the gallinule which Forster found? If the rail still exists here in this well-wooded valley, is it

not possible that the Paphyro does too? Well, he will be as likely across the lake as here, so let us pray and ferry across this morning.

We ferried across on an excellent raft built by this aged native craftsman, who is assuming so well all the burdens of the journey. Here, for the first time, I sincerely regretted the lack of a camera of any sort. The cheapest of cameras would be worth while. Some scientific expedition is this without a camera! To keep our equipment high and dry, split fei had been placed crosswise of the eight or ten huge stumps which floated us. These were pegged together horizontally, while the cross-pieces were also pegged to the long ones. Into the fei now were driven three many-forked guava sticks, and this pronged tripod supported all perishable goods, surmounted by gun and my hat. They in their breech-clouts, and I in my swimming suit took our positions, the boy and I on either fore end and Taufai in the rear, where it was narrow enough for him to paddle on either side. With his shoulder pole split for two paddles and the boy's for one, we progressed much more rapidly than we could have done swimming. Besides, the coolness of the water and the cooler atmosphere made a plunge not in the least tempting.

At upper side of the lake I immediately set out with gun to try for rail, leaving all the carrying to the men. Below the sugar-cane brakes I fear the water-weed "Maapape" is too dense even for rail to inhabit. For the house site I selected a vantage point below the forks of the three creeks which form the inflowing stream of the lake. From there I could listen for rail and

not possible that the Tapyuro does too? Well, he will be as likely across the lake as here, so let us pray and carry across this morning.

We carried across on an excellent raft built by this aged native craftsman, who is assuming so well all the burdens of the journey. Here, for the first time, I sincerely regretted the lack of a camera of any sort. The cheapest of cameras would be worth while. Some scientific expedition is this without a camera! To keep our equipment high and dry, split fel had been placed crosswise of the eight or ten large stumps which floated us. These were pegged together horizontally, while the cross-pieces were also pegged to the long ones. Into the fel now were driven three many-forked guava sticks, and this provided tripod supported all perishable goods, surrounded by gun and my hat. They in their breech-clouts, and I in my swimming suit took our positions, the boy and I on either fore and aft forked in the rear, where it was narrow enough for him to paddle on either side. With his shoulder pole split for two paddles and the boy's for one, we progressed much more rapidly than we could have done swimming. Besides, the coolness of the water and the cooler atmosphere made a plunge not in the least tempting.

At upper side of the lake I immediately set out with gun to try for rail, leaving all the carrying to the men. Below the sugar-cane grasses I fear the water-weed "Maapipe" is too dense even for rail to tumble. For the bonus site I selected a vantage point below the forks of the three streams which form the inflowing stream of the lake. From there I could listen for rail and

shearwaters, but Taufai after returning from the fei overruled my selection and decided upon a place farther up the westward and main stream. So with him I proceeded to investigate the chosen site.

As I walked up the stream bank where the water-weed had been somewhat compressed and thinned down by recent floods, I thought to myself, "This should be ideal rail territory". Sugar-cane approached to the water's edge opposite. I took one more cautious barefooted step. "Bur-r-r-r-r-r-r-r!" It lasted but the slightest fraction of a second. "Bang!" Too late! The little ball of whirring blackness with a gray patch under the tail had crossed the stream and disappeared into the dense sugar-cane jungle, whence there was no routing him. So these rail are not entirely flightless! In fact, their flight is very rapid and sudden, short and swift and startling, and so low that rapid shooting and accurate must be done to get them.

Here, opposite an orange tree--there really was no need of bringing our sack of oranges--we decided to pitch camp. I proceeded with my hunting, going on up this stream down which the trail from the Papenoo had so fortunately led me last December. Here the barefooted work got the best of me. The grass hidden rocks banged away at my ankles unmercifully. Now I can realize why the native Tahitian has no ankle. Those who had ankles received so many bruises that no doubt they were prevented from succeeding in the struggle to survive. The result is an ankleless tribe of mountaineers. So I returned down stream without seeing anything of interest, even when I penetrated the cane brake and subsequent or adjoining damp grove of "opui" and fei betwixt the stream and the

shearwaters, but Dwight after returning from the fat overtrial by selection and decided upon a place farther up the westward and main stream. So with him I proceeded to investigate the chosen site.

As I walked up the stream bank where the water-reed had been somewhat compressed and trimmed down by recent floods, I thought to myself, "This should be ideal rail territory". Suddenly came approached to the water's edge opposite. I took one more cautious barefooted step. "Sur-r-r-r-r-r-r-r!" It lasted but the slightest fraction of a second. "Bang!" Too late! The little ball of whirling blackness with a gray patch under the tail had crossed the stream and disappeared into the dense sugar-cane jungle, whence there was no routing him. So these rail are not entirely flightless! In fact, their flight is very rapid and sudden, short and swift and startling, and so low that rapid shooting and accurate must be done to get them.

Here, opposite an orange tree--there really was no need of bringing our sack of oranges--we decided to pitch camp. I proceeded with my hunting, going on up this stream down which the trail from the Papeno had so fortunately led me last December. Here the barefooted work got the best of me. The grass hidden roots banged away at my ankles unmercifully. Now I can realize why the native Tahitian has no ankle. Those who had ankles received so many bruises that no doubt they were prevented from succeeding in the struggle to survive. The result is an ankleless tribe of mountaineers. So I returned down stream without seeing anything of interest, even when I penetrated the cane brake and succeeded in finding damp grove of "opuu" and fat beneath the stream and the

hillside where trickles of water precipitate beautifully over black lava ledges. Here I tried still hunting as well as searching, but had no results whatever.

Returning to the homesite (for this is to be home I fear at least a week),we lunched upon the remains of beans and oatmeal, which made an edible goulash, and three crackers each. Then the men went on with their house building while I put on a pair of rope-soled shoes and my leggings of good heavy leather, which protect my ankles from vicious rocks. At the place where I had first decided to camp, I made a small frame modeled upon the "Moa aviri" trap of Tubuai, which is the same as the ones used here for both chickens and pigs. This we placed in some level gravel between the stream and the weeds just below the house. For bait we put in worms from the creek bed and snails with their shells crushed. During the heat of the day hereafter I shall make more of these, for I still have more hopes in them than I have in my marksmanship. Like the Englishman and the running partridges, I could hit them if they would stop a moment.

The middle fork comes into the west out of the canebrake. I explored it through several hundred meters of cane, and on up canyon where it plunges down through moss-covered --Noha whistles from afar, 2:47 A. M. May 21, 1921--boulders and banks densely fern grown amidst fei and opui. Very few trees present and the only bird life noticed was the little red-rumped weaver bird, which has invaded the mountains wherever any member of the grass family supplies its food of seeds. Sugar-cane here furnishes it ample food. The fei, which are overly abundant here, show signs

billiards where trickles of water precipitate beautifully over black lava ledges. Here I tried still hunting as well as scouting, but had no results whatever.

Returning to the bonsaits (for this is to be home I fear at least a week), we lunched upon the remains of beans and oatmeal, which made an edible gonlash, and then cracked snow. Then the men went on with their horse building while I put on a pair of rope-soled shoes and my leggings of good heavy leather, which protect my ankles from vicious rocks. At the place where I had first decided to camp, I made a small frame modeled upon the "Gos avirl" trap of Tuksmi, which is the same as the one used here for both chickens and pigs. This we placed in some level gravel between the stream and the woods just below the horse. For bait we put in worms from the creek bed and smalls with their shells crushed. During the heat of the day hereafter I shall make more of these, for I still have more hopes in them than I have in my marksmanship. Like the Englishman and the running partridge, I could hit them if they would stop a moment.

The middle fork comes into the west out of the canyons. I explored it through several hundred meters of cave, and on my canyon where it plunges down through moss-covered --Tuba wheatles from afar, Sidy A. M. May 21, 1921--boulders and makes dense fern grows amidst fel and opal. Very few trees present and the only bird life noticed was the little red-tempel weaver bird, which has invaded the mountains wherever any member of the grass family supplies its food of seeds. Sugar-cane here furnishes it ample food. The fel, which are overly abundant here, show signs

of being eaten by some bird, unless I mistake the rat sign, but I do not believe rats can climb them. What bird is it? I have not seen or heard the myna this side the lake plateau hill, nor the green fruit dove. Here the chief of Papenoo said he saw Rupi in 1915 rather scarce; I suspect them, and every few minutes attempt to call them. Nothing suspicious has been heard.

Returned down stream until below the point of the hill to the westward, which is opposite the house. Penetrated intervening jungle here, listening and calling for possible rail. No results. Ate an orange at house and again proceeded to hunt the stream banks. Went up stream until the banks became nothing but rocks, then returned; but going down, I followed that little branch streamlet into the bed of which Porzana tahitiensis had dived for safety last December. Now this pool might be the place. No, the next is it, for there are the weeds in which I entangled the swimming bird. Yes, that is the pool--"Whirr-rr-rr-rr-rr-rr-rr--", "Put!" Damn those "putting", sputtering auxiliary cartridges, for I believe I had that flying rail well covered. He alighted, however, amidst the moss-enshrouded boulders forming the embankment of the stream bed and left no trace of himself. Well, they are here, at least two of them, and I certainly am going to hunt them to death. My men seem to be contented with a diet of fei, and I certainly will eat anything or nothing before I'll return without at least one, and preferably two rail.

With this fresh discouragement as to my marksmanship (though I firmly believe a good cartridge would have succeeded, and tomorrow I'll use new ones from a fresh box) I followed down

of being eaten by some bird, unless I mistake the rat also, but I do not believe rats can climb trees. What bird is it? I have not seen or heard the open side side the large plateau hill, nor the green fruit dove. Here the owler of Espanoo said he saw Dogi in 1915 rather scarce; I suspect them, and every few minutes attempt to call them. Nothing suspicious has been heard.

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With this fresh discouragement as to my marksmanship (though I firmly believe a good cartridge would have succeeded, and tomorrow I'll use one from a fresh box) I followed down

stream to the lake inlet. No results. Returning, I was so intently watching for rail that it was not until I heard their faint squeaky call that I was aware of two swallows flitting about above me. One came within range of the auxiliary and flew safely away to its pardner after I shot at it. But a number ten followed just as the two closed in together, and the double death somewhat appeased my anger and disgust. "Opeia" is apparently the only consolation of this Vaihiria trip, and of it we have one per diem!

Potate is a happy youngster helping Taufai build houses and rafts, but chiefly gathering fei. Camp is literally full of them, green, red, and well ripened. He came and helped me beat the stream banks up beyond the known range of Porzana. A day ended which certainly has riled up my hunting blood. Saw two more pair of swallows above the hill west of the lake very high up. Heard no rail calls this evening, and not very many shearwaters after dark; the first one about seven-thirty. I hoped to be able to locate a colony by sound along some of the encircling mountain ridges. Taufai, who asked local natives concerning them at the mouth of the canyon, has expressed a desire to search for them tomorrow, so I'll let him.

May 21

A most gorgeous moonlit night, and so light that I was easily able to read a newspaper by the moonshine. I have a bad tired spot at about the point of my right shoulder blade. It bothered me all day yesterday and is quite sore this morning. There are a few shearwaters calling this morning, though they are

stream to the lake inlet. No results. Returning, I was so intently watching for rail that it was not until I heard their faint squeaky call that I was aware of two swallows flitting about above me. One came within range of the auxiliary and flew safely away to its perch after I shot at it. But a number ten followed just as the two closed in together, and the double death announced appeared my anger and disgust. "Opala" is apparently the only consolation of this Valhalla trip, and of it we have one per diem!

Potato is a happy youngster helping Tauel build houses and rafts, but chiefly gathering fel. Camp is literally full of them, green, red, and well ripened. He came and helped me beat the stream banks up beyond the known range of Tarzana. A day ended which certainly has filled up my longing blood. Saw two more pair of swallows above the hill west of the lake very high up. Heard no rail calls this evening, and not very many shorebirds after dark; the first one about seven-thirty. I hoped to be able to locate a colony by sound along some of the encircling mountain ridges. Tauel, who asked local natives concerning them at the mouth of the canyon, has expressed a desire to search for them tomorrow, so I'll let him.

May 21

A most boreous moonlit night, and so light that I was easily able to read a newspaper by the moonshine. I have a bad tired spot at about the point of my right shoulder blade. It bothered me all day yesterday and is quite sore this morning. There are a few shorebirds calling this morning, though they are

not overly abundant, having not heard more than one at any given time. They do not sound close enough to be about the ridges of the lower hills where the men will search from here, but seem rather to be on the two bordering ridges thousands of feet above us. I would like to hear more from the direction of the Papenoo, where the ridge is somewhat accessible from the pass where the trail crosses over.

Took a snooze just before daylight, and upon then awakening, hastened down to the creek, after reluctantly crawling into wet and chilly clothes, where Porzana was piping. The piping bird hushed at my approach and refused to flush. I made the rounds of the creek banks before breakfast, and even paused for several minutes at the spot where number two flushed yesterday, and the youngster was captured last Christmas. But Porzana, like Christmas, seems to come but once a year.

After breakfast, I once again made the rounds and thence proceeded up the west stream to impassable waterfalls in two small forks. Scaled the ridge between them by scrambling through the ieie growth. Spent an hour listening, looking, and trying to call for birds without the slightest response. It is certainly tough luck that the rail should be here where nothing else is present to keep busy upon.

Taufai and Potate desired to try for Noha today as directed by the local natives below. So, dressed down to partial trousers and hats, they sallied forth with a tipi apiece headed straight for the steepest parts of the semi-circular cliffs. From the ridge I was on today, I selected one which led well up to the

not overly abundant, having not heard more than one at any given time. They do not sound close enough to be about the ridges of the lower hills where the sun will scatter from here, but seem rather to be on the two bordering ridges thousands of feet above us. I would like to hear more from the direction of the Pagonoo, where the ridge is somewhat accessible from the pass where the trail crosses over.

Took a snooze just before daylight, and upon then awakening, hustened down to the creek, after relunctantly crawling into wet and chilly clothes, where Poreana was plying. The plying bird hushed at my approach and retired to flush. I made the rounds of the creek banks before breakfast, and even passed for several minutes at the spot where number two flushed yesterday, and the youngster was captured last Christmas. But Poreana, like Christmas, seems to come but once a year.

After breakfast, I once again made the rounds and thence proceeded up the west stream to impassable waterfalls in two small forks. Scaled the ridge between them by scrambling through the lala growth. Spent an hour listening, looking, and trying to call for birds without the slightest response. It is certainly tough luck that the trail should be here where nothing else is present to keep busy upon.

Bunral and Potato decided to try for Kona today as directed by the local natives below. So, dressed down to partial trousers and hats, they sallied forth with a tiki spices headed straight for the steepest parts of the semi-circular ridge. From the ridge I was on today, I selected one which led well up to the

second or third shelf, and strangely enough that was the one they ascended, and those shelves they searched in vain for the elusive Noha, every bit as bad a fellow as Meho; we have one specimen of each, now. They descended by another route and brought with them a large quantity of Taro to give us a little variety from our diet of fei. By living mostly upon these native foods which are so plentiful here I can save the rice, flour and beans for future consumption where the native food may not chance to be so handy.

Returning to camp about one o'clock, I spread everything out to dry in the blazing hot sun, and then skinned out the two swallows. With the one sole exception of a hawk seen above the Papenoo divide,this had been an entirely birdless day for me. I was quite surprised to hear the shriek of the reef-heron,not one of which I had thus far seen. Upon rushing out, gun in hand, I saw him coming down from the Papenoo divide, flying high overhead and passing down the valley. He appeared to stop at the further side of the lake, but being merely the common blue variety he was not worthy of pursuit.

The sun set behind Tetufera at three-thirty, which is as bad as Jackson Hole in wintertime, and should give some idea of the depth of this valley. At four o'clock, I again went out after Porzana and tried different tactics. Securing an advantageous position where I could watch two forks down stream, including the one where number two and the youngster had been observed, and a good distance up stream, I patiently sat for an hour, coaxing and piping, and again perfectly quiet, but no signs of rail resulted.

second or third small, and strangely enough that was the one they secured, and those shelves they searched in vain for the elusive Tom, every bit as bad a fellow as Mako; we have one specimen of each, now. They descended by another route and brought with them a large quantity of Taro to give us a little variety from our diet of fish. By living mostly upon these native foods which are so plentiful here I can save the rice, flour and beans for future consumption where the native food may not chance to be so handy.

Returning to camp about one o'clock, I spread everything out to dry in the blazing hot sun, and then skimmed out the two swallows. With the one sole exception of a hawk seen above the Pagenoo divide, this had been an entirely birdless day for me. I was quite surprised to hear the shriek of the reef-heron, not one of which I had thus far seen. Upon reaching out, gun in hand, I saw him coming down from the Pagenoo divide, flying high overhead and passing down the valley. He appeared to stop at the further side of the lake, but being merely the common blue variety he was not worthy of pursuit.

The sun set behind Tetaiara at three-thirty, which is as bad as Jackson Hole in wintertime, and should give some idea of the depth of this valley. At four o'clock, I again went out after Forsaxa and tried different tactics. Securing an advantageous position where I could watch two forks down stream, including the one where number two and the youngster had been observed, and a good distance up stream, I patiently sat for an hour, coaxing and piping, and again perfectly quiet, but no signs of fish resulted.

I finally decided to make the rounds of the stream banks. Proceeded down stream and was just above the entrance of the north and east forks when a rail fluttered across the narrow creek bed some twenty feet before me, and instantly disappeared into the sugar-cane which there borders the water. I didn't even get a shot at him, but the very sight of him increases my courage and hopes. Above the forks of the creek now appeared a black bird, which looked to be about the size of the flycatcher, but at its next appearance I perceived it to be our reliable friend Opeia. The auxiliary cartridge failed, but after he got well away from me, a number ten brought him down. Verily, the swallow rules this trip, though the rail governs in regards to time and place. Heard but a very little scattering piping this evening, and did not hear any Noha worth mentioning. There were one or two calls which I could not exactly locate as to direction.

A good dry bed is certainly a blessing after three nights of wet chilly blankets. So unusual is a good sunshiny day in these hills that I'm sorry I have no red ink to record it. The seven short hours of sunshine certainly accomplished results in drying the undergrowth, as well as our blankets. The men inform me that the roots they brought back are not Taro, but Apura, which, no doubt, belongs to the same genus however (Arum), and I hope will prove as edible as Taro itself.

May 22

Perhaps more will be accomplished by not treading the stream banks today in search of Meho than otherwise. At any rate,

I finally decided to make the rounds of the stream banks. Proceeded down stream and was just above the entrance of the north and east forks when a rail fluttered across the narrow creek bed some twenty feet before me, and instantly disappeared into the sugar-cane which there borders the water. I didn't even get a shot at him, but the very sight of him increases my courage and hope. Above the forks of the creek now appeared a black bird, which looked to be about the size of the flycatcher, but at its next appearance I perceived it to be our reliable friend Opela. The auxiliary cartridge failed, but after he got well away from me, a number ten brought him down. Verily, the swallow rules this trip, though the rail governs in regards to time and place. Heard but a very little scattering plying this evening, and did not hear any Zona worth mentioning. There were one or two calls which I could not exactly locate as to direction.

A good dry bed is certainly a blessing after three nights of wet chilly blankets. So unusual is a good sunshiny day in these hills that I'm sorry I have no red ink to record it. The seven short hours of sunshine certainly accomplished results in drying the undergrowth, as well as our blankets. The men inform me that the roots they brought back are not Tarro, but Ayura, which, no doubt, belongs to the same genus however (arum), and I hope will prove as edible as Tarro itself.

May 22

Perhaps more will be accomplished by not treading the stream banks today in search of Zona than otherwise. At any rate,

we are remaining in camp and cooking up the Apura which will come in very nicely for lunches. Our first article of diet to give out will be the sugar, but I suppose we can survive without it for a week or so. We have oranges to eat for a change from our starchy foods, and I suppose the "Maapape" which the horses like so well would be a good green food if necessary.

Two swallows came so close to camp this morning that I could not refrain from adding one of them to our daily collection. A few rail pipings were heard this morning but not very numerous. Clouds fill the sky and rain would not in the least surprise me. Two sunshiny days in succession would be an impossibility. I forgot to record yesterday that the men, after their arduous scramble along the face of the cliffs, saw but one swallow and two hawks. The people who introduced these hawks certainly played havoc with the bird life of Tahiti. The blue pigeon is perhaps annihilated, and no doubt other birds have perished at their hands. I wonder if they attempt to catch seabirds. They visit the plantations quite frequently, and no doubt take their toll of farmyard fowl. Rats have all the advantage in such jungle as is to be found everywhere that rats are. Like the myna and the wasp, the weaver birds and the rice, the hawk and rats are but another instance of a false impression arising from insufficient observation and a change of environment. What is food for one species in one place may not be desirable in another. Myna may eat wasps where other food is unavailable, but where fruit is plentiful, why bother about getting stung? Weaver birds may eat grass seeds and so prevent the spread of noxious weeds of that family, but where

we are remaining in camp and cooking up the figure which will come in very nicely for lunches. Our first article of diet to give out will be the sugar, but I suppose we can survive without it for a week or so. We have oranges to eat for a change from our starchy foods, and I suppose the "Sanapro" which the horses like so well would be a good green food if necessary.

Two swallows came so close to camp this morning that I could not restrain from adding one of them to our daily collection. A few rail pipiges were heard this morning but not very numerous. Clouds fill the sky and rain would not in the least surprise me.

Two wandering days in succession would be an impossibility. I forgot to record yesterday that the men, after their arduous scramble along the face of the cliffs, saw but one swallow and two hawks. The people who introduced these hawks certainly played havoc with the bird life of Tahiti. The nine pigeon is perhaps annihilated, and no doubt other birds have perished at their hands. I wonder if they attempt to catch sandpiper. They visit the plantations quite frequently, and no doubt take their toll of farmyard fowl. Rats have all the advantage in such jungle as is to be found everywhere that rats are. Like the myna and the wasp, the weaver birds and the mice, the hawk and rats are but another instance of a false impression arising from insufficient observation and a change of environment. What is food for one species in one place may not be desirable in another. Myna may eat wasps where other food is unavailable, but where fruit is plentiful, why bother about getting stung? Weaver birds may eat grass seeds and so prevent the spread of noxious weeds of that family, but where

rice is obtainable, why bother with grasses of less food value? Hawks may catch a rat now and then in some favorable European locality, but where pigeons and chickens are plentiful and more easily captured, why dive at a rat in briary lantana? An island offers a wonderful opportunity for control if the governing authorities show any judgment, but so few of them do. Their concern is not for the future but for their own pocket-books or fame. Who thinking of the future of Hawaii would have introduced more than a hundred thousand Japanese to those islands? Here they brought Chinese, who multiplying as rapidly as they finger the abiscus will soon be more than twice all the other inhabitants. This is a Chinese industrial colony merely under the French government.

Our Sunday dinner is going to be at least interesting. The boulders are heating above a fire. Piles of water-weed, fern leaves, and fei leaves are in readiness. Apura leaves were gathered, and some have been cut into bits--perhaps here are my greens--and amongst them have been placed bits of some rather strong smelling fat bacon I brought along and once threw away. But the natives gathered it in again. This green-pork mixture was salted and wrapped in Apura leaves within a fei frond. The latter must first be wilted above the fire before it can be successfully used for wrapping. A fibre from the fei frond secures the bundles. Fei and the smaller roots of Apura are placed upon the bed of hot stones, and above them the bundle of "green-pork". Fei leaves cover them; next fern fronds; stacks of opui leaves follow; and on top, the water-weed covers all. Larger boulders weight it down. This being Sunday, we have time to wait for the slow process of

rice is obtainable, why butter with grease of less food value? Banks may catch a rat now and then in some favorable European locality, but where pigeons and chickens are plentiful and more easily captured, why dive at a rat in friary lantern? An island offers a wonderful opportunity for control if the governing authorities show a judgment, but no few of them do. Their concern is not for the future but for their own pocket-books or fame. The thinking of the future of Hawaii would have introduced more than a hundred thousand Japanese to those islands? Here they brought Chinese, who multiplying as rapidly as they finger the spinous will soon be more than twice all the other inhabitants. This is a Chinese industrial colony merely under the French government.

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cooking. There was a song in the service about bread and gravy which would apply very well to this trip with the substitution of fei for the bread:

"On Monday we have fei and gravy;
On Tuesday we have gravy and fei;
On Wednesday and Thursday, we have plantain and gravy,
And the plantain's the same as the fei;
On Friday we have the same menu;
On Saturday also we're fed;
But when Sunday comes round, by way of diversion,
We eat the plain fei instead."

Shortly after noon we ate dinner. The Apura was "mera"--made the gums of the mouth sore, but they say it improves when cold. The chief dish was the greens, the Apura leaves cooked with bacon. That was delicious--not the old bacon--I let the men eat that. For my share of the dinner I opened a can of jam and made some chocolate. So we feasted royally. We are over-abundantly stocked with food now, Apura, fei, and oranges. As for me, I'm quite content, and surely these congenial natives can stand it, even though they may not enjoy it. This will somewhat balance the unjustifiable expense of the December Papenoo-Vaihiria trip.

If we can only stretch out the grub until "Meho" stops for a shot, or else I accidentally step on one, or something similar occurs, we will then be able to utilize a week or ten days going back to Papeete via the upper Papenoo valley, attempting to cross into the Punaruu from the Orefena trail, and thence taking the Fantana trail to Papeete. What birds we find along such a

cooking. There was a song in the service about bread and gravy which would apply very well to this trip with the substitution of fat for the bread:

"On Monday we have fat and gravy;
On Tuesday we have gravy and fat;
On Wednesday and Thursday, we have plantain and gravy,
And the plantain's the same as the fat;
On Friday we have the same song;
On Saturday also we're fat,
But when Sunday comes round, by way of diversion,
We eat the plain fat instead."

Shortly after noon we ate dinner. The figure was "sure"—made the gums of the mouth sore, but they say it improves when cold. The chief dish was the greens, the figure leaves cooked with bacon. That was delicious--not the old bacon--I let the men eat that. For my share of the dinner I opened a can of jam and made some chocolate. So we feasted royally. We are over-abundantly stocked with food now, figure, fat, and oranges. As for me, I'm quite content, and merely those congenital natives can stand it, even though they may not enjoy it. This will somewhat balance the unjustifiable expense of the December Pagoeno-Valdivia trip.

If we can only stretch out the grub until "Jabo" scope for a shot, or else I accidentally step on one, or something similar occurs, we will then be able to utilize a week or ten days going back to Pagoeta via the upper Pagoeno valley, attempting to cross into the Punarua from the Grulema trail, and thence taking the Mantana trail to Pagoeta. What birds we find along such a

route is extremely problematical, but it should give the best possible opportunities for swift, petrel, shearwaters, and hawks, and may spring some surprises.

While we were finishing dinner a hawk came around the hill-point across the creek. Before I could get some water-swollen cartridges trimmed down, he raised too high for shooting. Is it economy to not be provided with some sort of a convenient contrivance for keeping shells dry? I have lost at least a dozen shells because they have come open while wet. A hunter, especially of sea birds, should be provided with some manner of waterproof bag for the shells, a small one to carry in his jacket, and a larger one for the supply for the trip. Cameras and field glasses, cornmeal and cotton, and even grub also need some protection. A little original investment in good canvas bags would save a great deal during a trip. A hawk came again later, flying too high to shoot.

Potate desires to go swimming, but I hardly care for it as a Sabbatical diversion after being thoroughly saturated five days of the week. Potate has spent considerable of his time today hunting lizards, several of which he caught despite their wariness. Most of the day I have spent copying Aitken's "Working Dictionary" of Tahitian words. It has proved very useful and may solve the difficulties of my picking up the language. The old school method of memorizing vocabularies, the best half of which I do not use in a month, does not work. With a handy vocabulary in my pocket, and the actual use of the words in talking to the natives, I may prove successful.

3:20 P. M. The long shadow falls across Vaihiria, and

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5:20 P. M. The long shadow falls across Valhalla, and

two hours of cool twilight commence, an unusual blessing in the tropics.

May 23

I read rather late last evening, finishing the "Atlantic and Cardinal", the Stanford literary magazine. Very blustery just after dark, putting out the candle several times. A fairly clear sky and the day passed without rain,--two in succession, with the third promising to follow suit. Oh the irony of it all! When we move over to the vicinity of passerine birds in the Papenoo I'll wager we get ample rain. Or even as we hit the trail, when it is most disagreeable, it will rain torrents, while here where we are well housed the sun shines brightly.

We overslept half an hour after daylight this morning. I went up stream and continued my policy of watchful waiting above that small branch where number two was flushed. Lo! I win the feather duster! That Englishman has nothing whatever upon me. In fact, I go him one better. Not only must the game stop for me, but I suppose it must whistle to warn me of its approach. Of course, I have the miserable excuse that I was rubbing gnats out of my eyes, but when I looked up, there down the "anavai iti" (little river), peering over a rock, was a full-fledged "Meho". Cautiously I tried to raise the gun, when "Bur-r-r-r-r-r-r!"-- Meho was gone across the one-meter-wide creek and was into the water-weeds of the opposite bank. Nothing more was seen or heard of him. Later, I made the rounds of the stream bank with no more signs, except one trap was sprung and above it the canes

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May 22

I read rather late last evening, finishing the "Atlantic and Cardinal", the standard literary magazine. Very pleasant just after dark, putting out the candle several times. A fairly clear sky and the day passed without rain,--two in succession, with the third promising to follow suit. Oh the irony of it all! When we move over to the vicinity of passerine birds in the Japanese I'll wager we get ample rain. Or even as we hit the trail, when it is most disagreeable, it will rain torrents, while here where we are well housed the sun shines brightly.

We overslept half an hour after daylight this morning. I went up stream and continued my policy of watchful waiting above that small branch where number two was flushed. Lo! I win the feather duster! That Highlander has nothing whatever upon me. In fact, I go him one better. Not only must the game stop for me, but I suppose it must whistle to warn me of its approach. Of course, I have the miserable excuse that I was rubbing grate out of my eyes, but when I looked up, there down the "Savaval Ili" (little river), peering over a rock, was a full-fledged "Tabo". Cautiously I tried to raise the gun, when "Ker-r-r-r-r-r-r!"-- Tabo was gone across the one-meter-wide creek and was into the water-weeds of the opposite bank. Nothing more was seen or heard of him. Later, I made the rounds of the stream bank with no more signs, except one trap was sprung and above it the cause

gaped about two centimeters wide, just ample room for Meho to escape. This encourages me to set out more traps, and especially some in the "anavai iti" where Number Two, which I think is also Number Four, hangs out. So this second week of Vaihiria has commenced with slight, very slight, encouragement. May it prove successful!

This morning when we first stirred, three swallows passed overhead, but did not pause long enough for us to break out the gun. A hawk was seen high aloft also. Just now I heard a squeaking, and rushing out, saw four swallows well above me. Squeaking myself brought them overhead, but the shot was too long and none of them came down.

The men have had time, I think, to reach the divide. From that direction come two short monotone, whistling notes, similar to those heard from the cliffs above the lower end of the lake. This reminds me that the evening we camped on the divide before, I heard a strange call. So we must camp there again and endeavor to find the bird that makes the noise. I doubt if it be the cuckoo.

Now for the building of more traps and setting them out. It is very foolish that I did not bring some fish line, not only for catching eels for food, but also for snaring and trying to bait rail. There is an angleworm here that lives in the shallow water. One on a hook might catch a rail. I think the real haunts of Meho are the sugar-cane brakes, into which Numbers One and Three flew, although no cane is in the immediate proximity of Numbers Two and Four. Well, maybe something will happen yet; given time it should. Our sugar is beginning to look nearer gone

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than plentiful. I must ration it out. The same weight of refined sugar would probably have held out three weeks. Set the ration at a level tablespoonful with milk, slightly more without.

At ten o'clock I went into a thicket of Opui, and, cutting a heap of stalks, set to work and made four traps. Did not hear a sound of rail or other birds. Lizards seem to thrive well and play around on the dead leaves extensively. Used the bast of hibiscus (native parau) for binding trap cages.

At three I returned to house. The men arrived before four, just as I was setting out to place the traps, two down stream and two up. The hot sun had warped my first trap until it was useless. Selected locations where water keeps the ground well moist. Set up on where Number Three made its appearance Saturday evening. Here I have the greatest hopes of success because the creek is very narrow and weeds grow close in, while cane along the opposite shore furnish a good shelter. The trap finished, I proceeded cautiously up stream. I have taken to traveling with the butt of the gun against my shoulder, my finger on the trigger guard and ready to fly into place, and the safety released. "Bur-r-r-r-r!" "Pop!" Number Five crossed the creek and disappeared into the cane. I failed to connect with him, though I did succeed in getting the shot in at about the close of his short rapid flight. Well, I hope he trips over the trigger of my trap, which is not very distant, for this might well be Number Three.

Here is a moth with wings silver and green in waves, with black spots. It is very odd and beautiful. Too bad we cannot

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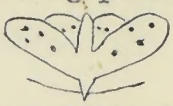
Here is a moth with wings silver and green in waves, with black spots. It is very odd and beautiful. Too bad we cannot

collect and know about everything! Entomology would be the least conflicting of all other sciences, and would add a great deal more interest to such an excursion as this. The cyanide bottle Mrs. Stokes gave me was far too feeble, and broke while aboard ship. I need a very heavy and durable one. The Coleoptera are, for the most part, of the weevil family, having the long proboscis. There are many species of them here at Tahiti.



The other two traps I set out in the neighborhood frequented by Numbers Two and Four, one behind the rock where Number Four paused for me this morning. I hope he also trips over the trigger of that trap tomorrow. It certainly would be great to gather in a pair of them tomorrow and proceed on our journey.

The men returned laden with wood, which is scarce hereabouts, and two bunches of the large fei that grow five hundred feet up the trail (elevation measurement). They worked the dividing ridge both directions, but failed to find even a burrow. Taufai desires to try the ridge east of the lake tomorrow. Perhaps I shall accompany them after I go the rounds of the creek. They report but two swallows and two hawks. Having missed the swallows this morning, this has been a birdless day. We have heard of rail on the Peninsula, but they are red-eyed and red-legged. I do not believe these are, but they have not paused long enough for me to see anything except a flutter of blackish feathers. Even Number Four paused but ever so briefly behind that rock. Well, we'll fight it out a while longer anyway. It may not be worth the time and expense I am giving it, but I hate to surrender so unconditionally.

Commencing at twenty minutes of seven, Noha called more

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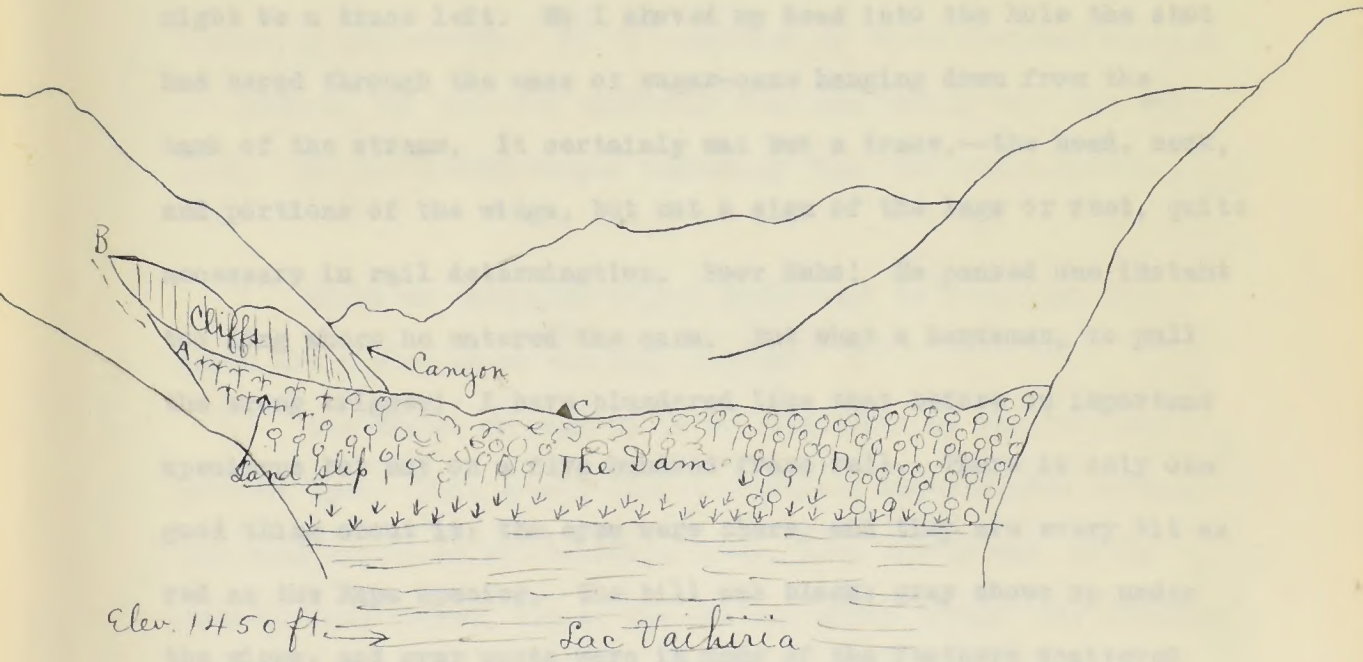
Commencing at twenty minutes of seven, John called more

than usual from the ridge to eastward this evening. Taufai spent a great deal of his time tonight listening in order to know where best to go in the morning. Although rather high-priced, as Tahitian wages run, he certainly earns his two dollars a day American. As a food finder and fire builder, he is beyond compare. He will carry a larger load than anyone else, and is a regular lizard at scaling cliffs, a whirlwind cutting trails.

May 24



From the Delta Mouth Looking South

A. elev. 1750 ft.
B. elev. 1900 ft.
C. elev. 1500 ft.
D. Cave where we camped.

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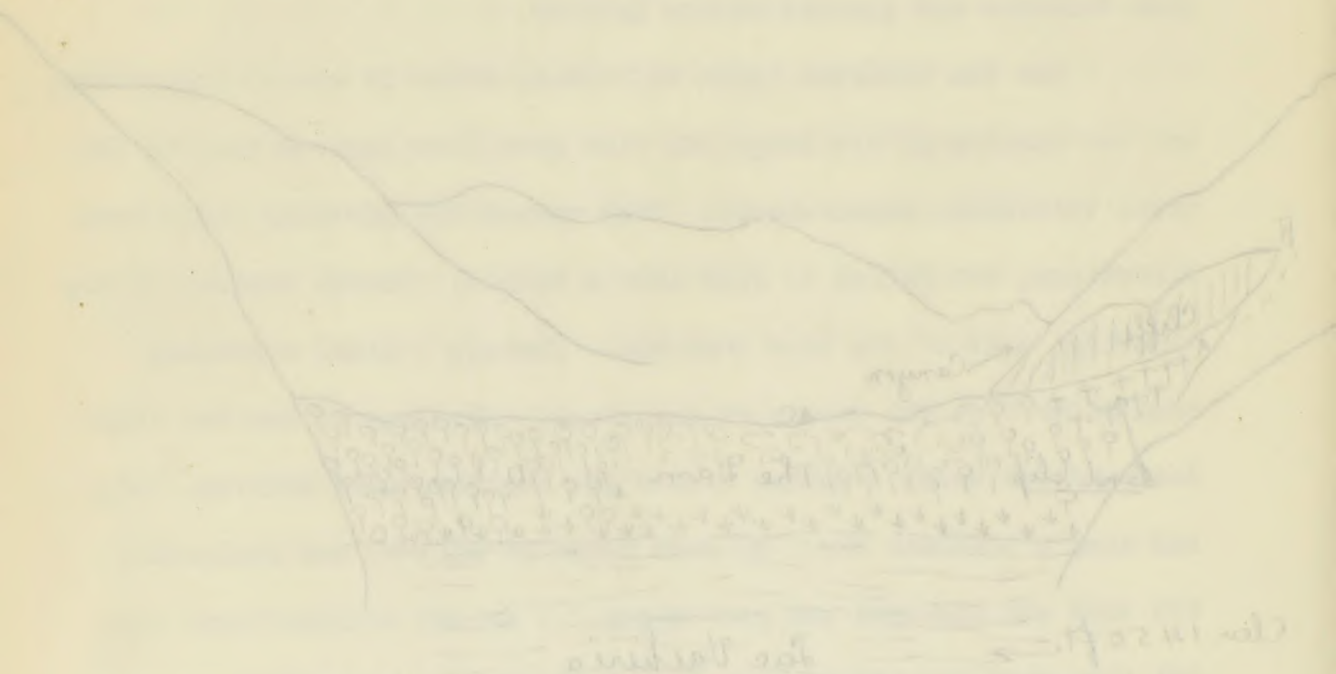

Potate thought surely "Opeia" would be around early this morning, as customary. So at daylight, while I crawled into my wet trousers, socks and shoes, I had him break out the gun. But of course no birds came around at all. I spent half an hour still hunting at the stream forks, then made the rounds of the streams,- down stream where Number Three first appeared, and below where Number Five crossed. I proceeded overly cautious, and prepared to shoot at an instant's notice. Two meters ahead of me, a rail crossed the stream and entered the canes. Bang! Holy murder! My finger fell back on the rear trigger and the large # 10 shell was fired. No use looking for him if that hit him. Still, there might be a trace left. So I shoved my head into the hole the shot had bored through the mass of sugar-cane hanging down from the bank of the stream. It certainly was but a trace,--the head, neck, and portions of the wings, but not a sign of the legs or feet, quite necessary in rail determination. Poor Meho! He paused one instant too long where he entered the cane. But what a huntsman, to pull the wrong trigger! I have blundered like that before on important specimens but not on a five hundred franc rail. There is only one good thing about it: the eyes were there, and they are every bit as red as the Rapa species. The bill was black; gray shows up under the wings; and gray spots were in many of the feathers scattered about.

While at breakfast, we had the biggest surprise of the trip. Having coaxed and called for eight days wherever there seemed the slightest chance for flycatchers without result, a "peep-peep"

Potato thought surely "Opera" would be around early this morning, as customary. So at daylight, while I crawled into my wet trousers, socks and shoes, I had him break out the gun. But of course no birds came around at all. I spent half an hour still hunting at the stream forks, then made the rounds of the streams,-- down stream where Number Three first appeared, and below where Number Five crossed. I proceeded overly cautious, and prepared to shoot at an instant's notice. Two meters ahead of me, a rail crossed the stream and entered the cane. Bang! Holy murder! My finger fell back on the rear trigger and the large # 10 shell was fired. No use looking for him if that hit him. Still, there might be a trace left. So I shoved my head into the hole the shot had bored through the mass of sugar-cane hanging down from the bank of the stream. It certainly was but a trace,--the head, neck, and portions of the wings, but not a sign of the legs or feet, quite necessary in rail determination. Poor Bob! He pawned one instant too long where he entered the cane. But what a huntsman, to pull the wrong trigger! I have blundered like that before on important specimens but not on a five hundred frame rail. There is only one good thing about it: the eyes were there, and they are every bit as red as the Cape species. The bill was black; gray shows up under the wings; and gray spots were in many of the feathers scattered about.

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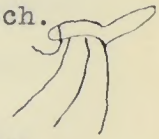
certainly made me jump for the gun. I answered, and here came "Omamo Iriiu" into camp. I got him. The only flycatcher seen or heard in this valley. Then we struck out to assail the cliffs.

We crossed the lake this morning after having to cut our raft into two to get it down the stream which was very shallow. We ascended the talus slope beneath the bold cliff east of the lower end of the lake to the base of the cliff, and then came on up the face of the slope north of it a hundred feet farther, where Taufai seems to doubt the advisability of further progress. We seem to be above somewhat of a cliff, from the sound of a rock just now dropped. We happen to be near one of those very common community spider-webs. It is inhabited by three distinct species of spiders; two entirely different ones are eating upon the same moth. One has a body shaped something like this rough sketch.



While we were down below, hawks were up here; now two hawks are flying about the lake plateau.

The sketch on page 60 is to illustrate my idea of this present lake. This great, almost circular, amphitheatre forming the head waters of the Vaihiria river, very likely was, at an ancient date indeed, one of the craters which formed this volcano of Tahiti, but the present lake is certainly not a crater-lake. It would, indeed, be a strange volcano with a crater of this formation.and shape. The surrounding ravines which the lake floods strike me as being drowned valleys. The great dam filling the valley is as thick as it is wide at the top, and about eight

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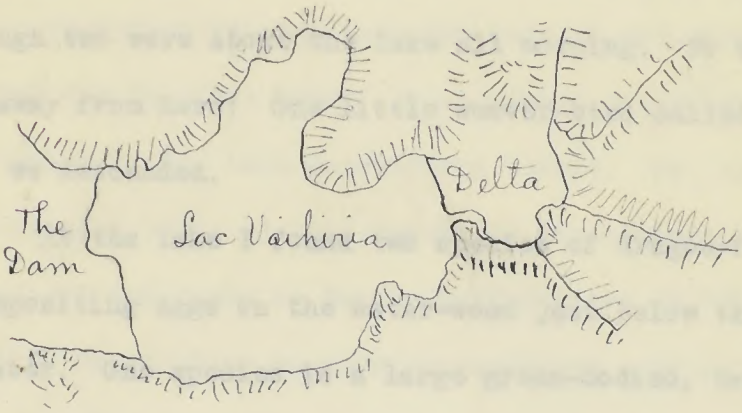
hundred feet deep or high. It is composed of exceedingly broken-up boulders, some of enormous size which rise up out of the mass like pinnacles. Anyone who has followed or tried to follow the trail across this dam will admit that there is not a level stretch along it of twenty-five meters. The rocks are moss covered and fern hidden, while the water-weed and Opui reed grow abundantly over them.



Guava trees border the lake, but native trees and tree ferns dominate the forest on top of the dam. Under and through this great mass of broken-up boulders, the water of Vaihiria lake drains out through many channels which gush forth at the bottom of the dam and form the river head. A distinct shore line some three or four meters higher than the present is perceptible. But even though the outlet was seepage, after years it probably carried out the filling and lowered its level. Heavy rains had preceeded our arrival and followed our first night at the lake, filling it two feet higher than it is today after four days of fairly

hundred feet deep or high. It is composed of exceedingly broken-up boulders, some of enormous size which rise up out of the mass like pinnacles. Anyone who has followed or tried to follow the trail across this dam will admit that there is not a level stretch along it of twenty-five meters. The rocks are mass covered and fern hidden, while the water-weed and Opul reed grow abundantly over them.

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decent weather.

We lunched upon Apura, fei and oranges at an elevation of 1900 feet, where we found our way impeded, or at least imperiled by precipitate walls. Returning, I realized just how steep had been our ascent, when two or three times without decent roots to hold to, no means of getting down offered, except the precarious hold of ferns and grass. Taufai certainly is a lizard, but not of the parlor sofa variety. Hawks refused to be enticed near us, although two were about the lake all morning. No wonder the ducks keep away from here! One little weaver bird called upon us twice while we descended.

At the lake I found two species of dragon-flies mating and depositing eggs on the water-weed just below the surface of the water. One species is a large green-bodied, brown-abdomened fellow, with the second, third, and fourth abdominal segments steel blue, and green spots along the sides of the rest. The other is a red-bodied and smaller variety. There are also a couple of damosel-flies, unless the differences of color are sexual.

The men gathered considerable dead guava branches, and Taufai "withiupped" them on the raft (fire wood is scarce at camp). I decided upon poling near the shore as being more speedy than paddling straight across. It also gave me a better chance to study the nature of the shoreline. But the Tahitian has no idea whatever of poling a boat or raft. Furthermore, the two sections were insufficiently secured together and offered to part in the middle more than once. Personally, we had nothing to worry about,

decent weather.

We launched upon Agura, Tai and Grangee at an elevation of 1800 feet, where we found our way impeded, or at least impelled by precipitate walls. Returning, I realized just how steep had been our ascent, when two or three times without decent roots to hold to, no means of getting down offered, except the precarious hold of ferns and grass. Tanfat certainly is a lizard, but not of the parlor sofa variety. Hawks refused to be scolded near us, although two were about the lake all morning. To wonder the ducks keep away from here! One little weaver bird called upon us twice while we descended.

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but the gun would have been an irreparable loss. Oh, the mockery of the shearwaters high aloft whistling as I write this evening, while we poor, feeble, land-locked creatures must turn back at a little wall of rock! The shore is very steep. In fact, it is not a shore at all but a wall, being in several places vertical above water and undermined below, yet not old enough to reveal any serious effects of the water. I hold firmly to my theory of a filled-in, dammed valley.

Returning to camp from the lake, I preceded the men and watched for possible Meho. It is always customary to expect game where it has been encountered before. So, as I approached that fateful scene of this morning's disastrous tragedy, I was very alert and ready to shoot the auxiliary cartridge. "Bur-r-r!" "Putt!" Curse those sputtering auxiliary shells! This one lost an invaluable specimen, for I'll swear I had him well covered and time enough to blaze away with the large shell in my anger. He entered the cane exactly where poor Number Six had disappeared. Thinking he might not be able to climb the over-hanging embankment, I tried to get the men to blockade above and below while I searched for him, but he had time to escape before they got my idea. Then they played havoc with the cane by cutting it away. Right where these two last rails were seen and shot to pieces, a log of wood has rotted away from its burial in the bank, leaving a deep hole. Taufai was all for digging it out after Meho, but I prodded it with a cane and decided it was not likely connected with the birds. Still, is it not possible that they have taken up their residence in it? Tomorrow I'll let him dig it out to see.

but the gun would have been an irreparable loss. Oh, the mockery of the shoemakers high aloft whistling as I write this evening, while we poor, feeble, land-locked creatures must turn back at a little wall of rock! The shore is very steep. In fact, it is not a shore at all but a wall, being in several places vertical above water and undermined below, yet not old enough to reveal any serious effects of the water. I hold firmly to my theory of a filled-in, dammed valley.

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At camp I made up the flycatcher and filled out Meho's head and neck. Is it worth saving? While so doing, the rice boiled over, and Potate being slow I grabbed a knife and tried to twist the lid up to let the steam escape. The steam escaped all right, so did most of the boiling water and went all over my foot, burning the instep quite severely. I sent Potate up stream to observe and rebait traps. He reports one tripped but empty. The sun drying the purau trigger might have done that. Opened a can of meat and stewed it up with the rice. Then made some excellent baking-powder dumplings and cooked in the stew, which was a welcome change from our straight fei diet, although the very small variety and very large variety brought down from above yesterday by Taufai are certainly delicious, cooked à la Tahiti.

Noha commenced calling at 6:45, and still calls occasionally at 9:20. From the work we have done here in searching for shearwater burrows, where there is such an enormous amount of territory in proportion to the number of birds, I am thoroughly convinced that a good guide who knew exactly where to go is the best possible means and the cheapest of finding them. For this purpose I hope to get into the Punaruu from Papenoo valley.

May 25

We were awakened at daylight this morning by the "Stranger" calling with that monotone whistle from the hill across the creek from the house. I thought it sounded from the fei at the foot of the hill. Dressed as rapidly as possible, high laced leggings not being conducive to speed, and went over there. I got into an

At camp I made up the flycatcher and filled out Tamo's head and neck. Is it worth saving? While so doing, the rice boiled over, and Potato being slow I grabbed a knife and tried to twist the lid up to let the steam escape. The steam escaped all right, so did most of the boiling water and went all over my foot, burning the instep quite severely. I sent Potato up stream to observe and rabbit traps. He reports one tripped but empty. The sun drying the porcu trigger might have done that. Opened a can of meat and stewed it up with the rice. Then made some excellent baking-powder dumplings and cooked in the stew, which was a welcome change from our straight fat diet, although the very small variety and very large variety brought down from above yesterday by Tautai are certainly delicious, cooked à la Tahiti.

Kohe commenced calling at 4:45, and still calls occasionally at 9:20. From the work we have done here in searching for cheerwater burrows, where there is such an enormous amount of territory in proportion to the number of birds, I am thoroughly convinced that a good guide who knew exactly where to go is the best possible means and the cheapest of finding them. For this purpose I hope to get into the Tunarum from Kapono valley.

May 28

We were awakened at daylight this morning by the "Stranger" calling with that monotone whistle from the hill across the creek from the house. I thought it sounded from the fat at the foot of the hill. Dressed as rapidly as possible, high laced leggings not being conducive to speed, and went over there. I got into an

awful mess of sugar-cane and other "pestiferous" entanglements, the crackling of which might have scared the "Stranger" away. At any rate, not a sound of his calling was again heard. Swallows alone answered my various attempts at calling. Returned to camp for coffee, after being out an hour,via the upper stream, where the trap on Number Two's rock was sprung but empty. No evidence of an escape.

Putting Potate to work about camp catching lizards and ordering twenty snails (pupu) for each trap, with Taufai I came down to the north or central fork, and we have cleared it of cane so as to make it accessible for hunting Meho. I am quite surprised by the very frequent sign on the larger rocks along the stream-bed. I did not notice it the day I ascended here, but that was perhaps due to the recent rains and high water water having cleaned off the rocks. With this additional territory, I hope to get more shots and some specimens of these rails in the two days I have decided to remain here. Got another swallow this morning. Bless their benevolent little hearts!

Still hunted in reeds adjoining cane brake opposite numerous sign in north creek for half an hour or more, with no results whatever. Returned empty-handed to camp via the stream banks. The sun came from behind the mountain east of us, shortly after 9:30 A. M. We are to have another cloudless day, no doubt, as we are in camp and prepared for rain. We will get ample precipitation when next we take the trail, no doubt. The men were busy making more traps. Taufai makes them on the style of the first drawn at Tubuai. They are very neat affairs, well bound with the

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Still hunted in reeds adjoining cane brake opposite number-one sign in north creek for half an hour or more, with no results whatever. Returned empty-handed to camp via the stream bank. The sun came from behind the mountain east of us, shortly after 9:30 A. M. We are to have another cloudless day, no doubt, as we are in camp and prepared for rain. We will get ample precipitation when next we take the trail, no doubt. The men were busy making more traps. Taufal makes them on the style of the first drawn at Tabual. They are very neat affairs, well bound with the

purau. There being no hunting grounds within reach of these four hours of hot sunshine, I am spending them on studying the Polynesian language in so far as it will help me with the collecting. Two weeks spent upon it last September would have been worth while.

Just now, two hawks flew about the hillside opposite, but refused to come for any form of calling, from the crow of a rooster to the warbler's song. Instead, they raised above the hill and were there joined in their circling by three others. What a future awaits the Tahitian chicken farmers, say in fifty years! They will at least have to keep shotguns and kill off a few of these hawks, for they will undoubtedly make raids upon the poultry. I am anxious to get where boobies or other sea-birds nest on this island to see if these hawks bother them at all. It is easy to understand where Rupi, the blue pigeon, has gone. Unused to enemies in the air, they no doubt fell an easy victim to this pirate's strike. How incomplete our work is when we are making no authorized and definite endeavors to ascertain when these birds were introduced! French authorities, however, hardly know themselves. The native name, "Amumoa", is confirmation of their attacks upon "moa", the chicken. (amu--eat, moa--chicken.) These hawks are not wont to soar about like the California buzzard or I might attempt to add to the great abundance of reflections upon "The Soaring Hawk".

There are a few little red-rumped weaver birds in the sugar-cane here, but they will not be coaxed as the ones down below will. I have dropped two into the sugar-cane at different days, but failed to find them. Once today I attempted to cut a lane for observation

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through a portion of a cane brake, but soon discovered how fruitless the attempt would be, especially since the ground is everywhere uneven and rocky. The stream banks are the only hope.

Went the rounds of the stream banks this afternoon, and spent an hour patiently waiting where the sign was most evident in the north stream we opened up this morning. Taufai's traps are marvels of primitive craftiness. He placed them in the best possible locations, cutting out the over-hanging canes and weeds carefully so as to make room barely sufficient for the trap, at the same time maintaining as much darkness and seclusion as possible. Potate obeyed the order to put twenty snails under each trap. Taufai added worms, and, true to all Tahitian traditions, fei. To the native it is indeed a strange creature that will not eat the fei. Well, our first idea for feeding birds is bread crumbs, so why not fei for them? The joke may be on me in the morning--how I hope it is! To what humiliation to my intelligence would I not submit for one perfect specimen of Meho, the rail!

My hour of vigil ceased when Iore rahi, the rat, crossed the stream. I shot her and tomorrow will attempt to make up the skin as we are going to be short of space in the lizard jar. She is large for the native rat, but appears much smaller than the Norway, or common rat.

6:50 P. M. Meho is insultingly mocking at us from the creek below camp. I have not once heard the vibrant, exhilarating trill that the Rapa rail indulged in. A very wet mouth, sucked against the back of the vibrating hand for a dozen trills, best imitates this bird's call. The short, snappy, piping whistle is

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the same as the Rapa species; but I have not heard anything whatever like the whimpering,undertone, conversational notes, and have had no results in various attempts to get into communication with them. Why this bird should be scarce is beyond me, or why supposed to be extinct, for the natives know of it. We Europeans are altogether too self-assured; because we cannot find specimens is not incontrovertible evidence that anything is extinct. The first thing that should be done on any kind of collecting is to learn the language of the people inhabiting the country, enough to understand somewhat of what they know about the objects sought. I believe the few notes we are able to acquire from native information regarding the habits of birds are worth a great deal, admitting that they will have some strange explanations for everything they do not understand from observation alone. For instance, regarding the cuckoo, if I could converse well in Tahitian I could discover whether or not the natives knew anything concerning their nesting or migratory habits. At Tubuai, for instance, they suppose the wandering tatler lays its eggs at sea, and that they are hatched from 'bubbles' of ocean water. Alaska is no more than a bubble in their minds anyway. Except those who have been to France during the war, they have a very difficult time conceiving of the extent of a continent. They cannot imagine a river longer than from Tahiti to San Francisco, or wider than their lagoon channel; and to think of a lake about the area of Tahiti at an altitude higher than the summit of Orehena, the highest peak here, is beyond them. Well, Yellowstone Lake and the headwaters of the Mississippi are quite a distant comparison, and were quite unbelievable even to

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the enlightened Europeans not fifty years ago.

Shearwaters commenced calling at 6:55, one every minute or so. A rat is at our refuse heap. I just tried a candle-light shot, but the auxiliary sputtered very feebly, and he went off unscathed. These cartridges do not stand the least little moisture, and everywhere the dew-covered weeds reach to and beyond the pockets of the hunting jacket.

As I returned to camp just at dark, the "Stranger" was calling with that low monotone whistle. He answered several times, but when I went over near the hill he refused to divulge his location. Tried routing him out by shooting one of these worthless auxiliaries, but he only went deeper into the darkness of the brush. Is it the ground dove? I shall be loathe to leave here without finding out, but Meho is apparently going to be victor of the siege, and this unknown ally too will be untaken unless our luck turns.

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BOOK XV.

Vaihiria
Papenoo
Moorea

May 26--June 22, 1921.

Vaihiria

May 26

The "Stranger" again awoke us just at the break of day. Up and after him at six, which it was ere I could dress. But again he refused to answer my calls when I got around to the point of the hill from whence his earlier notes seemed to come. Nor would he at all reveal himself even when I shot a scare-auxiliary in his direction. Yesterday I looked through the fei bed for tracks, but the ground here is nowheres soft enough to take an impression from a bird as light as a pigeon. Proceeded upon the rounds of the stream banks and only found eight of nine traps sprung, I have little doubt, by rats which escaped. The rail may be stronger and thinner than I believe he is, but at one place the tracks very evidently told that "iore" had stolen the bait.

All day yesterday and this morning not a sign was seen of the rail. While I skinned out the rat, an awful job very poorly executed, Taufai took the gun and wandered off. He said he shot at a weaver bird and missed it. Of course, while he was away, two

BOOK XV.

Vathirla
Tagenoo
Moores

May 28--June 25, 1921.

Vathirla

May 28.

The "stranger" again awoke me just at the break of day. Up and after him at six, which it was ere I could dress. But again he refused to answer my calls when I got around to the point of the hill from whence his earlier notes seemed to come. Nor would he at all reveal himself even when I shot a snare-auxiliary in his direction. Yesterday I looked through the tal bed for tracks, but the ground here is nowhere soft enough to take an impression from a bird as light as a pigeon. Proceeded upon the rounds of the stream banks and only found sight of nine traps sprung, I have little doubt, by rats which escaped. The trail may be stronger and thinner than I believe be is, but at one place the tracks very evidently told that "Ioro" had stolen the bait.

All day yesterday and this morning not a sign was seen of the rail. While I skinned out the rat, an awful job very poorly executed, Tawfat took the gun and wandered off. He said he shot at a weaver bird and missed it. Of course, while he was away, two

swallows came over close enough almost for the auxiliary. At his return I went after them across stream, but, missing a very long shot, I succeeded in scaring them away.

Taufai suggested that after we ate lunch we move camp. A counsel of war held decided upon the question favorably. Unconditional surrender was submitted to Meho and the "Stranger", only casualty to be recorded during the week's engagement, and it certainly was disastrous to both sides. I hate to give up, but suppose I have nothing but my own poor marksmanship to blame. I filled a can with cartridges; it was very heavy. Just for fun I took it and Taufai's load in either hand as if balancing mine as the heaviest. But he got the best of me on that joke by tying the can to his already heavy load. So all I brought up these fourteen hundred feet of pure climbing was some twenty oranges. Through enormous groves of fei the trail ascends to the divide. No doubt this is the most marvelous fei garden on the island. As we packed up it threatened rain, which would not be at all surprising now we are moving again.

Not a sign of anything birdlike until the ridge was surmounted. There two swallows flitted about all the rest of the day, but I failed to hit them with the auxiliary shells, one third of which sputtered very miserably at critical shots. Two hawks were soaring above the Papenoo. I tried in vain to coax them towards me. We were watching them so intently that we did not see a third arrive from the Vaihiria side, espy us, and swerve off beyond range when first observed.

About five-thirty there came another surprise from the

swallows came over close enough almost for the auxiliary. At his return I went after them across stream, but, missing a very long shot, I succeeded in scaring them away.

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About five-thirty there came another surprise from the

other direction. I was this time watching the two swallows and had auxiliary barrels in each of the shotgun barrels. From the Papenoo side came a bird, smaller than the hawks, black above and white below. Of all the unexpected things, a shearwater this early in the evening! It uttered not a sound and flew directly down the valley until lost from view far above the right ridge. The men swear it could not be Noha, to come in by daylight. It might be Putu, they think.

Then just before dark as we were eating, a small bird fluttered over us and flew down the ridge. It might have been Ruru, the kingfisher, for one had chattered not very long before, but I would not vouch for its identification. A birdless day, partly due again to poor marksmanship as to swallows at least, and partly to a failure to be looking in the right direction.

It is time for Noha to come in,--6:45.

6:50--First call not very distant. Two toward Tetufera, one toward left ridge.

6:55--Faint calls in distance.

7:05--One about as close as first.

There were a few other calls as I dropped off to sleep, and a few during the night and early morning, but none close enough to be dwelling on this ridge. So we will decide Taufai and Potate searched it sufficiently, if either mountain were accessible something might be found, but it is best to go where the guide knows the location of holes. Hence we are to shove on for the Punaruu, Taufai having approved attempting to get down there via Orefena trail.

other direction. I was this time watching the two swallows and had auxiliary barrels in each of the shotgun barrels. From the Pagamoo side came a bird, smaller than the hawks, black above and white below. Of all the unexpected things, a snowwater this early in the evening! It uttered not a sound and flew directly down the valley until lost from view far above the right ridge. The men swear it could not be Moha, to come in by daylight. It might be Pretu, they think.

Then just before dark as we were eating, a small bird fluttered over us and flew down the ridge. It might have been Pretu, the kingfisher, for one had chattered not very long before, but I would not vouch for its identification. A birdless day, partly due again to poor marksmanship as to swallows at least, and partly to a failure to be looking in the right direction.

It is time for Moha to come in.--6:45.

6:50--First call not very distant. Two toward Tetefere, one toward Isit ridge.

6:55--Faint calls in distance.

7:05--One about as close as first.

There were a few other calls as I dropped off to sleep, and a few during the night and early morning, but none close enough to be dwelling on this ridge. So we will decide Tauful and Totete searched it sufficiently. If either mountain were accessible something might be found, but it is best to go where the guide knows the location of holes. Hence we are to shove on for the Tunarum, Tauful having approved attempting to get down there via Orefuma trail.

May 27

We were fortunate last night in not having rain, for we took the risk of not building any shelter. Fogs came up occasionally, but they were not dense enough to produce even drippings that were serious. Rather heavy fog towards morning. One swallow passed over us twice before we had the gun broken out.

Hit the trail, and such a trail down this very steep ridge! It is not so bad ascending, as one can hold on better, but descending it is fierce. How these natives manage so well with loads, I do not understand. We were resting when Taufai heard a strange noise from the brush-entangled hillside beside the trail. It was a very low-toned, gutteral grumbling. Bird perhaps? So we have just spent an hour searching for it, but even the noise has stopped. At first I climbed out on a tree, but could see nothing, so closely is every square inch of light space utilized by the vegetation. There I heard a rat squeak, which may explain the other noise. It is commencing to rain.

And it rained excessively all the rest of the day. Now I am quite certain that luck is somewhat against this particular expedition. While in Vaihiria where rain would have kept the rails out food hunting, we had a week of hot sunshiny weather; now that we are over here where the dove, kingfisher, flycatcher, and warbler are to be found, it rains heavily and keeps all the birds in under shelter.

The descent into the Papenoo is no baby's play. It is made by two drops of eight hundred feet each, and one could drop the full distance if desirable in either case, for water succeeds

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in falling most of the way in two leaps off to the side of the trail, with a plateau at an elevation of about two thousand feet between them. The surprising feature of this journey was the extent of the growth of ferns and other jungle growth, especially the liliaceous opui, which in many places thoroughly obliterated the trail which was plain enough just six months ago. Several times I lost the trail, for I went ahead clearing for the men with the burdens. Pig sign was very distinct and not very ancient all along the plateau trail, but we did not have the good fortune to run across any. Perhaps the cutting out the rubbish scared them away. The trail from the plateau down to the forks of this branch of the Papenoo is well obliterated not only by growth of weeds but also by criss-crossing cattle trails. I believe the weed is spread by the seed clinging to them. We did not come across any of them, though their tracks in places were very fresh.

On the plateau, as we passed some pandanus trees, I was answered by the merry twitter of the flycatcher and succeeded in getting him;at about this location, the boys last December got our first specimen of that bird.

As we left camp this morning and started down the trail, doves could be seen and heard in the trees about the plateau, but when we arrived there it was raining too much to even hope for doves.

At the cave, which we reached rather late in the afternoon, I found a pair of swallows just commencing to build their nest. The male I shot from a branch above where the two of them were perched. Here last December, I obtained five or three (I don't

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exactly remember), including fledglings about ready to fly. It seems the breeding season is about a month later, from the condition of the sexual organs.

(The boy has just dug out the slips in a bottle with names on them, on one of which my December party is recorded.

Anatole Drollet, 12 Tetepa, 1920.

Marcel Hart, Ralph. H. Edward H. Mable H.

Georgina Hart. Alice H. Jeanne H. No dates.

Muriana Vahine.

The boy has a clever method of inserting a loop of the inevitable purau bark into the bottle, shaking the rolled paper into the loop and extracting it. He pulled a cork out in this manner. To my former note I added a postscript with their names:

Taufai, of Punaavia.

Mapete, of Manuhoe.

The walls of this cave are adorned with native names and dates of thirty years ago.)

A kingfisher also was curious and perched on a branch of the orange tree before the cave to observe our actions. Well, it was not entirely a birdless day anyway.

Our diet of fei and oranges has now ceased and will henceforth be rice and oranges. We received a very severe shock upon opening the can of tripe to find it badly spoiled. So the last can of meat had to be opened. We have left a stick of bologna about three inches long. Unless we succeed in meeting Puaa aviri, our diet will not be overly protein during the rest of the trip. Rice and beans, however, will help in that respect, and Taufai is

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going after the prawn and eel.

What a welcome is a large commodious, dry cave after a long day of rain-drenched traveling! A good swim also helped to make us comfortable. Blankets were dry enough to be warm.

May 28

The God of rain and the Seventh Day Adventists' receives our worship today, which means that the river is swollen to the dangerous point and we have decided it best to wait until tomorrow before proceeding upon our journey. No one likes to leave a perfectly comfortable sheltering rock, fifty feet or more in diameter, when the simple process of trading a day with God will probably be much more comfortable. Oddly enough, we did the same trick here last December because one of the men played sick on Saturday.

Taufai had just started making the fire when the first visitor of the day (I hope there will be plenty more) arrived. Ami came and perched upon a pandanus limb extending out from above one of the supporting boulders, a pillar of our temple. He waited for me to put the gun together, open a can and get a dry shell, load, aim, and fire. A swallow was disturbed by the shot, but came not near enough for the auxiliary in the other barrel.

Taufai has fashioned a fairly good fish-hook from the piece of wire I fortunately brought along. A piece of grocery twine must serve for string, but purau bark would have done as well. With an eel a day, we can live very satisfactorily for

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Tauret has fashioned a fairly good fish-hook from the piece of wire I fortunately brought along. A piece of grocery twine must serve for string, but yesterday Bert would have done as well. With an eel a day, we can live very satisfactorily for

several days. Skimping on sugar will make it last a while yet. Rice cakes, dumplings and the like will serve for bread, though we have a few crackers left. Coffee will last about as long as the sugar. Plenty of tea. It will take at least three day's traveling to reach the Punaruu where Taufai can supply us with ample food.

Rained steadily all the forenoon. The river is booming. Rained steadily all the afternoon, but showed signs of clearing up just before dark. The men returned at three P. M. without pui on account of the high water, but they brought with them a good, man-sized load of fei, for which they must have ascended to considerable height because they do not grow down in the floor of this valley. So once again our main diet consists of fei and oranges. They also brought in some Apura and prepared three packets of greens for the oven, flavoring it with a portion of the balogna remains. But in spite of a splendidly hot "umu hima'a" in which the rocks glowed with white heat, this greatly desired dish failed to get thoroughly cooked, and consequently it made the gums of our mouths sore. I mixed up some bread, and again tried the native oven on it. The steam does not escape, and consequently the bread is rather soggy, and further the pressure of the stones on top keep it from rising properly. But we made out a meal very satisfactorily.

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The day breaks clear, and a promise of good weather means good hunting. I am sorely tempted to return with Taural to the

plateau and hunt for Rupi, which I rather expect to be there. The doves, flycatchers, and kingfishers would pay for the trip if nothing else is discovered. We have such a bounteous supply of fei here in camp that it would certainly be criminal to leave it, and too much to ask even Taufai to carry it along with us. That plateau strikes me as being the most favorable bird territory I have yet come across anywhere, and unfortunately both times I have crossed it have been during rainy weather when birds cannot be expected to be about. Besides hopes for Rupi, I anticipate ground doves in such a place, though pigs might have put a stop to them. Still, pigs were here long before the earliest white, so if there were ground doves then and not now, rats and cats must be responsible. Strangely enough, I have seen no signs of cats at any distance from the cultivated districts. Rats, however, are everywhere, but they are not all the big European one. I should have brought my trap along and caught a few more. I lighted the candle this morning when I heard some about, but could not see them well enough to shoot. A swallow was an early dawn visitor about the cave entrance, but came not near after I loaded the gun.

The men yesterday really did their day's work, so I did not even ask them to accompany me. During the morning it seemed that my trade of the Sabbath had been a beneficial one. Motete said "This was missionary day. Bye bye you capsize. No go to Papeete." Of course, I laughed ridiculously at the very suggestion, climbed into my wet clothes reluctantly, for I had a headache and felt none too well. But the climb of eight hundred feet

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soon got my blood up. There were doves calling, and the kingfishers were chattering, but neither of them would come to me nor let me approach them. Thus the morning passed birdless. One hawk passed overhead while I was "cooing", but too high to reach.

At noon I arrived at the pandanus grove where we obtained the flycatcher Friday. Not a sound of them could I arouse. A heavy mist rolled down from the Vaihiria pass, and it became quite chilly. Then to my happy surprise, while I "cooed" for doves, I heard the clattering trill of rails in the swamp below me, followed by that whimpering monotone which had proved successful in Rapa. All elated and enthusiastic, I hurried down there and looked the situation over. I could see fairly well into the reeds, but it had now commenced a drizzling rain. Cutting a short lane into the reeds, I built a temporary shelter of banana leaves, piled up ferns below it, and sat down for two hours of coaxing. Although I became quite chilly, the possibility of getting a rail kept me there until nearly three o'clock. My joints cracked when I moved. For two hours not a sound came from the marsh. Although I traveled to camp rapidly it had commenced raining in torrents, and the downhill grade was not conducive to warmth. At camp, where I arrived in an hour, I hurriedly changed into dry clothes after a chilly bath. Made up a heavy cup of chocolate, and took some aspirin. Ate heartily of the Apura greens the men had cooked, and a flour concoction like macaroni, and fei; then, with woolen bathing suit and sweater and pajamas on,I turned in. I took the central position in bed, wherein

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Motete had "swum" through all the nights of the trip,--he has a combination trudgeon and crawl stroke. Then my chill began to set in, with alternate chills and raging fever. I was perhaps more restless than the boy that night.

It was a long wearisome night, and with the morning still some rain was falling. Perhaps it would have been better to have moved down to the next sheltering rock, but I decided not to risk getting wet again without the warmth of sunshine to help out. It seems that had I remained in camp Sunday I could have obtained at least three birds which came here during the rain to seek shelter apparently, a swallow, a flycatcher, and a myna.

Apparently Motete has the laugh on me regarding the "missionary day".

May 30

Taufai took the gun and went hunting of his own accord. He returned about ten to advise moving to the next cave, which he had visited in such a short time. But, as it was raining and I had a raging run of fever all morning, I refused to go. We still have two bunches of fei and considerable flour, rice, and beans; the sugar is gone, also milk, and one can of jam is left. We have had no meat of any kind, except a very little bologna chopped into the Apura greens Sunday, since Friday. The question with me is whether it were wisest to plunge madly on through the wet brush and river to reach a doctor or to trust to time to quell this malady. Oddly enough, now that it is needed, I have no quinine along with me, and not much aspirin.

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Tantal took the gun and went hunting of his own accord. He returned about ten to advise moving to the next cove, which he had visited in such a short time. But, as it was raining and I had a raging run of fever all morning, I returned to go. We still have two bunches of kol and considerable flour, rice, and beans; the sugar is gone, also milk, and one can of jam is left. We have had no meat of any kind, except a very little bolgna chopped into the spare greens Sunday, since Friday. The question with me is whether it were wisest to plunge madly on through the wet brush and river to reach a doctor or to trust to time to quell this malady. Oddly enough, now that it is needed, I have no quinine along with me, and not much aspirin.

May 31

Taufai returned late last evening after going hunting again in the afternoon with one swallow, and reports that the river was down to his knees. The sky seemed to clear off in the evening as if a sunshiny day were coming up. But during another restless night, not quite so bad as the previous one, the stars disappeared and I feared the worst, which was rain just before daylight and has continued well throughout the morning. Taufai with hunting jacket, and over it my slicker or raincoat, again went hunting.

It rained steadily all day. Taufai returned with two swallows. Blessed Opeia! Without him this would have been a profitless, almost birdless journey. It is ten o'clock, which means I have spent four hours of misery since retiring at six,--wakeful, painful, unmitigated misery. Meho might have been satisfied with our ignominious defeat at Vaihiria without attacking the rear of our retreating column and inflicting such disastrous injury. This evening I tried half an hour's exercise, pacing slowly and unsteadily back and forth within the limits of the cave. Last night I did sleep by spells, but not a wink so far tonight. My breathing is also somewhat affected, being short and shallow. A deep breath makes me cough faintly and feebly. But I have promised the men to "haere" tomorrow morning, at least to the next sheltering rock which is not far. A collector should certainly be a sturdy fellow like Beck, capable of enduring all manner of hardships. I never before realized how feeble I am. The spirit is willing but the flesh so weak.

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Tawfel returned late last evening after going hunting again in the afternoon with one swallow, and reports that the river was down to his knees. The sky seemed to clear off in the evening as if a smashing day were coming up. But during another restless night, not quite so bad as the previous one, the stars disappeared and I feared the worst, which was rain just before daylight and has continued well throughout the morning. Tawfel with hunting jacket, and over it my slicker or raincoat, again went hunting.

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June 1

The foregoing was written about ten o'clock, while I was in the most raging fever of my illness. This morning I awoke, unbelievable miracle, feeling quite well. I awoke the men and told them the joyful news, and incidentally we rearranged the bedding from the tangled mass I had kicked it into. Then I slept rather well about three hours, and now feel perfectly able and capable of "haere-ing" in spite of the continuous rain and roaring stream. The calls of Noha come down from aloft in spite of the noisy water. Everyone slept late this morning because of their disturbed slumbers, up till midnight.

Having made my promise, I am leaving the decision about traveling to Taufai, who says "Too much'ua' and 'pape'". I wonder if the "noo" on Papenoo signifies "great river". What a tremendous torrent it must be after all these flooded streams unite, with these six days of almost continuous rainfall! I succeeded in getting considerable more sleep before and after daylight, and now feel quite capable of work, a little lightness about the head and an occasional cough being the only remaining effects of my three days of fever.

Perhaps it is not exactly dutiful to remain in shelter all day, but on the other hand cannot more be accomplished on favorable days in the future by spending this day of tropical downpour studying into the Tahitian language? The mere energetic killing and skinning of as many birds as possible may make a marvelous showing each shipment, but the lack of notes, or poor notes on life habits, seems to me more deplorable than a slight

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depression in the number of specimens. Linnaeus' school were the mere collectors and classifiers, but Darwin studied life habits. If this work is to be of any decided benefit, it will be through the study of the birds collected. For instance, it is now definitely established that Porzana tahitiensis still exist. A knowledge of the language would have made the discovery the first month and would have found a much easier place to hunt them, for the natives know the bird, have a name (Meho) for it, and know where we can find it. The boy Stephen, or young man of English fatherhood, who speaks both French and Native as well as English, could help us amazingly but he had something to do when Mr. Beck spoke to him about guiding.

It rained steadily all morning and during the afternoon until about four o'clock, when the sun began to break through the clouds frequently. With no rain tonight, the river should go down to a fordable condition. I ate sparingly of rice with what little milk there was, at two successive times; also ate one orange,--I wonder if they are good for a person? I certainly haven't much appetite, and during the day suffered a relapse of temperament. It is not my legs today, but in the region of my liver there is quite a soreness. My breathing has again shortened up, and may the liver's being sore not be the cause of that? I have tried to keep on my feet as much as possible today, but now at five o'clock (guessed time) I came to bed and counted a pulse of seventy-five. That sore spot on my right side, just below my ribs, is no doubt the cause of the ailment, whatever it is. Can it be something derived from

depression in the number of specimens. Dimmeans' school were the mere collectors and classifiers, but Darwin studied life habits. If this work is to be of any decided benefit, it will be through the study of the birds collected. For instance, it is now definitely established that Fossans tanitiensis still exist. A knowledge of the language would have made the discovery the first month and would have found a much easier place to hunt them, for the natives know the bird, have a name (Kebo) for it, and know where we can find it. The boy Stephen, or young man of English fatherhood, who speaks both French and Native as well as English, could help us amazingly but he had something to do when Mr. Hook spoke to him about guiding.

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drinking Papenoo water unboiled? This valley is stocked with cattle, and anyone who has ever observed cattle should know how they pollute water by standing in it during the heat of the day and excreting freely. Besides, all the banks are their bed-grounds, and the recent rains have washed an unusual amount of their filth into the flooded stream. Would such a malady be noticed the second day after drinking the water? The chill of the Meho conflict would certainly help bring it to the climax of Monday.

June 2

2:30 P. M. Such a downpour! Taufai also is in bed to-day. That Herculean is too aged for work like this (he is fifty-six), but he is the best found yet. Poor Motete! for his miserable five francs a day he has all the work to do about camp.

Well, it has rained this spell twenty-six hours without the slightest relaxation in its steady downpour, and no hopes nor prospects for tomorrow, the barometer remaining steady most of the day.

A hawk has been observed almost daily above the ridge opposite, when the rain permitted seeing that far, winging his way to more profitable poultry fields where the rain has not driven the birds into oblivion. Today he came over our cave, not very high, but we have had the gun in oil all day and no one had energy to call him, anyway.

No change in temperature nor temperaments this night, a detailed account of which would but repeat others. Might mention

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No change in temperature nor temperaments this night, a detailed account of which would but repeat others. Might mention

the fact that there was no cessation or lull in the rain, and the river is exceedingly high.

June 5

Well, it is still raining steadily, and the barometer records no probable change in the weather. It is now eleven, which takes the rainy spell past the one week mark. What a trying siege this has been! Had it but given us time to have reached the Punaruu-Papenoo divide, we could have found a riverless trail right to Papeete, along which I had expected no little number of Noha burrows. Incidentally, there is a method of reaching Taufai's Noha diggings directly from Papeete. Fantana valley is some ten kilometers in length.

The most interesting occurrence of the day was the discovery that the boy Motate's ceaseless scratching was, as suspicioned, due to cooties, and consequently the camp has the added uncomfortableness of a lousy one. Here is another characteristic of the Polynesian. Though excessively cleanly in appearance, the fact remains that they're not cleanly because they rarely, if ever, indulge in a hot or disinfected bath. At any rate, they are notoriously lousy wherever we've been in these French Islands. The poor devils! They are not even being educated so that they can keep themselves rid of these pests. The French fall down lower in my estimation the more I see of them. Personally, I prefer many Germans whom I know to any Frenchman I have yet met. But that's another matter. As colonial administrators, from the example here, they are about one step better,

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and not much more, than the old Spaniard. They have much to learn from those people they so personally dislike (except when they need protection), the Anglo-Saxons. No American was ever more money-crazy or commercially heartless than these French are, the difference being that one had Yankee ingenuity, and the other had not that requisite for real finance. As colonial administrators they improve their colonies only so far as they can see money in their own pockets. They have no idea of development. Americans and English have done ninety per cent. of the improved plantation work in Tahiti. The Frenchman's idea of agricultural improvement is an uncontrolled immigration of Chinese.

Well, anyway one must expect to find cooties sometime in a rough life like this, especially when circumstances make you a bed-fellow with those whom you know pretty well to be "erumby". It adds a little more interest to this imprisonment.

Incidentally, it rained just a bit steadier and harder today than any previous day of our siege, and the river! it is a river even here, high up at its head, a booming, swirling, mirky, treacherous flood. Boulders of no little size come pounding over the slight plunge above the cave, with a thud that makes one look about every once in awhile.

I made a survey of our food resources today. We have a pound and a half of rice, two pounds of beans, a pound and a half of flour, three-quarters of a pound of oatmeal, a quarter of a pound of salt, three spoons of coffee, a fifth of a pound of tea, one can of jam, one layer of soda crackers, and eighteen

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fei, not overly large. How many days can three men live on that amount of food with all the oranges they care to eat? What a commotion I created when I put the camp on rations and tabooed all the grub except what I handed out! Thank God! I got well enough to take that charge.

June 4

Up until midnight. There was an unusual rawness in the humid air. I would estimate the temperature well below sixty. Sometime after midnight I dropped off, not awakening till six. Heavy rain until midnight and heavy rain since six, so I see no reason to suspect any change while asleep. The rain this morning is so heavy that we have not seen the nearest ridge for some time. I forgot to mention that besides the listed food, we had one pot of beans and a small pot of rice cooked. We cooked it for yesterday but fortunately the fire was too slow, being poorly fanned, and so I was able to make it contraband to war. Not a bean or rice grain has yet been issued, but we've had four rations of soup from it. We also had another streak of good fortune. When the men made up their oven to cook the remaining fei, I once more tried some bread, minus all shortening. Wrapping the dough in leaves according to their custom had failed, so this time I had my biscuits well moulded and ready. The frying pan heated very hot. When they leveled off the bed of hot stones, I preempted the hottest central portion, placed a few clean leaves upon it, placed the biscuits upon them, and inverted the frying pan above them.

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Then the natives put their fei around the pan and covered in the usual manner with ample fern leaves. A little over an hour later the oven was opened, and flipping the hot frying pan over revealed the most evenly and perfectly browned rolls I ever saw anywhere, bar no bakery show windows. Being composed of flour which has been on a wet and rough journey for three weeks, salt, water, and baking-powder, I considered them prize winners even for taste. The very looks of them threw away all idea of further hanging on to our last delicacy, a can of jam. Giving each man one spoonful of jam to put upon those delicious cakes gave me the idea that it was high time to commence rationing them. How I enjoyed that bread and jam, with a bowl of good hot bean soup! Two delicacies after a three or four days' fast, at a time when only coarse foods, and they scarce, appeared to be in camp! But to look around and see the natives smearing their jam upon the unfinished fei, of which they ate four or five, was certainly disgusting. The fortunate part of the oven was that it had been opened too soon for the fei, though just right for my bread. Had the fei been thoroughly cooked, they very likely would have eaten twice as many; for the Tahitian's idea, like that of most primitive men, is to eat all you can of the best you have while you've got it. They are so bounteously fed by nature that they have no idea of making food last through such a siege as this.

The rain has ceased for the first time since four o'clock Thursday. It is now ten, Saturday. Forty-two hours! This little stream is raised no less than four feet. The barometer dropped one tenth of an inch yesterday, but was back at normal

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this morning.

According to the regulations of the siege, this being a rainless day, I have been on my back with a most terrific headache cultivated last night during the rawness of the forepart of the night, and probably due to the fact that a trickle running down the wall rock alongside of which I sleep found a channel directly under my head, the clothing I used for pillowing being quite wet this morning. All day I have been unable to even supervise the drying of them. Well, they'll have to be dry before I put them on, the way I feel tonight.

This morning the men went after some fei,--they did not like being rationed on them apparently. They took the gun along, but saw nothing, Taufai going on down country, the boy coming to camp with the fei. He built the fires immediately, and after an hour and a half succeeded in getting a cup of water hot enough to make some tea, which has helped my head a trifle. Just made a survey of my aspirin which I knew was rather low, but, finding four whole pills and considerable powdered, I decided that the present headache rated the powder at least. The rest should carry me through, unless the rain comes upon us once more. The barometer is down .05 of an inch since the weather broke, when it stood at the first reading for this cave 28.15 inches (altitude 1200 feet).

The river is dropping away rapidly, so it sounds and the boy confirms the noise. Sick or well, sink or swim, we hike tomorrow. At least the nearest cave will be reached, which will be about my limit of endurance, but it will get me underway for

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This morning the men went after some fuel,--they did not like being restrained on them apparently. They took the gun along, but saw nothing, Ewalel going on down country, the boy coming to camp with the fuel. He built the fires immediately, and after an hour and a half succeeded in getting a cup of water hot enough to make some tea, which has helped my head a trifle. Just made a survey of my supplies which I knew was rather low, but, finding four whole pills and considerable powdered, I decided that the present headache rated the powder at least. The rest should carry me through, unless the rain comes upon us once more. The barometer is down .05 of an inch since the weather broke, when it stood at the first reading for this cave 29.15 inches (altitude 1300 feet).

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the next days. Taufai returned with a gloriously long, fat eel. What a relief this day has brought! No delicately prepared steak or chop, roast or stew ever looked better than that long, slimy, boneless "river-snake". He shot him, which is really quite a good method of obtaining them, for they haunt shallow water where the shot is effective. Upon it and fei we feast in the morning ere we hike. My mouth has watered in anticipation ever since I first saw the old veteran commissariat-commander of our expedition return with it. It will be our first meat for nine days. I once or twice thought of trying rats, but was too ill to sit up on the vague prospects of shooting one, and the natives abhor the idea of "cori". I had to make the boy hold the legs of the one I skinned against his utter disgust. Well, some people have been starved into eating even rats.

June 5

It was a little disappointing during the middle of the night to hear rain, but the morning broke as clear as one could expect in this country just following such a deluge. I went down to the river this morning for my ablutions. It has dropped but little, one foot perhaps. Taufai says he can ford it, however, so we'll make the attempt today after our feast. Puhi, the eel, or at least what was left of him after Motate let part slip into the river, went into the oven this morning at 8:30.

Three swallows came into camp at ten. One of them I shot, but both natives are still searching in vain for him. He seemed perfectly dead, and I, too, searched beneath the tip of a branch

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from which he fell, with no success. That is the curse of jungle hunting, it is so hard to find the game. How a well trained bird dog would help!

While eating fei and eel, I shot a mouse which I pickled. This and the rat should be a little interesting to tell if they are common introduced "vermin" which have penetrated these inmost recesses.

11:00 A. M. Preparing to hike.

The trail was a slow process for me until my legs got to going. After that, it was only ordinarily entangled with irksome weeds and rubbish. Finally getting weary of struggling through them, and realizing that Taufai could follow the trail much more readily, I urged him ahead. This proved all right until they went so far ahead that I lost all track of them and then naturally passed them. Finally reaching a place where they must either have forded or else gone over a muddy trail, and seeing no signs of their tracks, and knowing they would not ford without me, I sat down and fired twice. Somewhat later I fired twice again. Soon after that they appeared coming along the trail. Henceforth all went well, and we soon were made happy by the fresh signs of natives having collected bamboo tubes for "Puaa aviri". That meant they must be at our destination. A crowded house won't matter if they have meat. What an incentive was that to crowd onward and turn down any suggestion Taufai made of building a house. This cave is just across a large stream which flows into the one we crossed today a little below here. The trail came over the point of land betwixt them.

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Elevation 850 feet. Arriving at the river, I saw the huntsmen supinely reclining on the bamboo bunk beneath the sheltering rock. I fired a shot just to let them know we were coming. I succeeded in wading this fork myself. We must have arrived here shortly after four, for it is now five. The bamboo bunk is under reconstruction in length to five m. The men and Taufai set to work immediately upon it. They have twenty-five tubes of meat. Now to bargain for one! Perhaps they'll feed us tonight. Perhaps? For us as guests they spread their best, a delicious roast of veal and two tubes of good, fat pork. The roast was splendidly browned and juicy, the pork well cooked. What happened may be better imagined then written about. I think we did full justice to the food set before us. The natives, of course, prefer pig to everything else. The roast veal suited my taste.

The way these natives eat pork is a caution. No foreigner can hope to eat as much. They would eat just pork every day, I believe, if it were plentiful enough. The surprise is that they can stand it so well. We had a large pot full of fei, which we produced for our share of the meal. They who have been living on meat so long thought much more of the fei, perhaps, than we who had been living upon fei so long thought of the meat. At any rate, it was a fair enough change. Everyone enjoyed the feast, and ate not only like, but as much as pigs. The man who has his three squares a day must live a hum-drum, uneventful existence. No wonder they turn to all manner of devices for amusement, from picture shows to baseball. That man never likely

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appreciated a feast of the best serving as we did our fei and unseasoned, unserved veal and pork that night.

The meal finished, we turned in. The bamboo is a change but not much of an improvement upon the hard packed earth. I struck one large bamboo just in the center of my allotted space, naturally to be expected. So the night's sport was shifting weight from one side of it to the other, and trying to snodge upon neighbors for a man's width of comfort. Sleep was not eternal.

There is one blessed quality about the Tahitian,--he has failed to learn from Europeans that food is property. To take food of any nature is not stealth to them. It reminds me of the old Western Range days, the pioneer days which finally faded from the American map during my early youth.

June 6

The first thing that came to ear this morning was the singing of the young boy in the hunting party. Camp was stirring about seven. The opening prayer was by Taufai. Whether the missionary succeeded in Christianizing the Polynesian is a debatable question. He succeeded in teaching him the outward show of religion at any rate. As that is about the extent of most religions, I suppose we really have no kick coming at the natives. They practise many of Christ's teachings which are neglected in the business man's world, though a larger per cent. of them, perhaps, are immoral. Who of us shall throw the first stone?

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With much trouble I managed to get Motate to build a fire and make some sort of coffee, which the men are drinking before they take to the field. They offered us some tubes of meat, which Taufai nobly refused, but I told them we would take two, in place of which I'll leave ten francs which it would be insulting to offer them now. We move on one more station this morning.

That is, we moved on, but did not make the next station by any means. We first erred by following a well defined trail which ultimately came close to a river flowing the wrong direction if our trail were destined for Papenoo. We followed down this river until it joined the one we slept beside, and this one we crossed. Had to ford the main river three times during the day, once below where the fork on which we were besieged had joined. Strangely, Tafai got the important load across dry enough. I put my watch on it and he took the gun along. Then going up stream to where the current swerved by a large boulder, I made a dive and swim for it, coming out well before the troubled waters commenced. But when Tafai tried fording higher up, it went over his head. He has been carefully carrying along with him a bamboo for a fishing pole. It looks like excellent material and must be else he certainly would not take all this bother. The boy had just passed it to me before he swam across. I was still out in the river to my waist watching anxiously how Tafai succeeded, when his feet went out. I thrust the pole to him, and with his free hand he caught it and pulled up just before the troubled waters began. Otherwise, our equipment

With much trouble I managed to get Motete to build a fire and make some sort of coffee, which the men are drinking before they take to the field. They offered us some tubes of meat, which Tarai nobly refused, but I told them we would take two, in place of which I'll leave tea France which it would be insulting to offer them now. We move on one more station this morning.

That is, we moved on, but did not make the next station by any means. We first erred by following a well defined trail which ultimately came close to a river flowing the wrong direction if our trail were destined for Fagoso. We followed down this river until it joined the one we slept beside, and this one we crossed. Had to ford the main river three times during the day, once below where the fork on which we were bonlogged had joined. Strangely, Tarai got the important load across dry enough. I put my watch on it and he took the gun along. Then going up stream to where the current swerved by a large boulder, I made a dive and swim for it, coming out well before the troubled waters commenced. But when Tarai tried fording higher up, it went over his head. He has been carefully carrying along with him a bamboo for a fishing pole. It looks like excellent material and must be also he certainly would not take all this bother. The boy had just passed it to me before he swam across. I was still out in the river to my waist watching amusingly how Tarai succeeded, when his feet went out. I thrust the pole to him, and with his free hand he caught it and pulled up just before the troubled waters began. Otherwise, our equipment

might have preceded us towards Papenoo.

When we came to the next double ford,--just over and back to avoid a rock,-- we decided the hill behind the rock could be climbed with less effort, but not today for here it was four o'clock. We had lunched on a cane of pork bounteously provided by our kind friends. Just after making the swim, we killed a pair of doves, and I got a kingfisher along the trail, and a swallow. Our progress is very slow at the fords, and none too rapid elsewhere. We are some little distance above the cave of the Deadman's Skull yet, but hope to do better tomorrow.

Two blue herons down stream at dark.

June 7

We took a chance upon no rain last night and came through all right. I even left the canvas, which was rather wet from river fording, off until the damp and cold dew began to have a rather chilling effect through the blanket. A beautiful sky of stars all night. There should be a few birds about this morning. Our first task is to make a trail over the point and save two crossings of the river.

A river in the minds of the Tahitians (so it would seem from many of their actions) is a sewage dump. As a source of water supply, it is of secondary consideration. First and foremost, it must help them keep up cleanly appearances. Next, it is for bathing and washing clothes. Of course, they have to have some water for cooking purposes, so they get it from the river if there be no handy well. The wells, I believe, have all been

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dug since the missionary's days. The eating bowl is the most interesting thing about them. Having finished fingering their food into the sauce it contained, or drinking tea or coffee from it, they proceed to use it as a finger bowl.

This morning I sent the natives with the tipis to cut a trail over the point and save two swims. They came back three hours later from having been far down the river, and had not given the point a second glance. Consequently, we did not get under way until twelve o'clock. There were three fords before we struck the rest of the river at Skull Cave, which would not have been as good as the sandpit we found to make our bed upon, for it seems to have dripped terribly this storm. At the third ford I shunned the river trail for a cowpath, Motate following.

When we reached the river and crossed it there was not a sign of Tafai, so we waited, and waited, and waited. The boy crossed back and searched for him. Not a sign! I yelled and shot. Not an answer! After half an hour we decided he had gone on, and saw what might have been his track. Later, they were quite evident, so we struck down trail after him. Found him waiting peacefully just before ford twenty-four. I am counting them off as we go.

The white heron was farther down stream than usual and saw us coming some hundred yards off, making a wide detour around us. A green heron flew by camp and lit in a tree beyond, this morning. I had no success in calling birds at all today. We should pass through some warblers tomorrow. A few myna are noticeable, and kingfishers are frequent. I got one and two

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This morning I sent the natives with the triple to cut a trail over the point and save two miles. They came back three hours later from having been far down the river, and had not given the point a second glance. Consequently, we did not get under way until twelve o'clock. There were three fords before we struck the rest of the river at Small Cave, which would not have been as good as the sample we found to make our bed upon, for it seems to have dripped terribly this storm. At the third ford I abandoned the river trail for a cowpath, Mokale following.

When we reached the river and crossed it there was not a sign of Tafel, so we waited, and waited, and waited. The boy crossed back and searched for him. Not a sign! I yelled and shot. Not an answer! After half an hour we decided he had gone on, and saw what might have been his track. Later, they were quite evident, so we struck down trail after him. Found him waiting peacefully just before ford twenty-four. I am counting them off as we go.

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green herons as we went along.

We stopped for the night after five, opposite a most striking little waterfall. It is not so high, the leap being less than a hundred feet. Above, the stream must have a steep approach and the channel is so shaped that it shoots the water clear of the rocks almost horizontally. Then it falls in those arrowheads of spray so characteristic of small cataracts and occasionally observed on large ones if conditions are favorable.

During the night and this morning we heard some shearwaters, which the natives distinguish from Noha by the name of Rauo. I believe it to be but the more distant calls of the same bird. The calls I would hear approaching at Pirae. We had a clear night but a heavy raw dew. Our sandy bed out in the gravelly flood channel of the river was quite comfortable. Eighteen more fords and we are out of here.

June 8

The myna commenced its noise at daylight. A green heron flew over camp. Later, a blue heron flying high passed up canyon. White-tailed tropic-birds were noted about the cliffs here yesterday. Have seen none yet this morning.

The sun did not come up until after we left here in the shadow of the canyon wall. It was quite chilly getting into wading clothes. If my count last December were correct, we have eighteen fords to make today. We plodded steadily along, sometimes picking up the trail over points of land, but mostly just stumbling along over the boulder-strewn river channel. My count

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was not correct. Instead of thirty-six fords in the Papenoo, there are at least forty-two. Of course, I might have been obliged to ford twice in places where the trail kept well back from the river.

Of three warblers heard I obtained two shots, but one only sputtered, so I got but one bird. I called whenever it appeared favorable. Just above the bridge I obtained a green heron. Many reef heron seen during day, and lots of myna lower down.

We changed clothes behind a clump of willows and then came into the village of Papenoo. At the tavern we found accomodations, but the telephone being out of order we must wait for the stage in the morning. We had a good drinking coconut each, but Tafai declined his. Then went to Chinaman's and got two loaves of bread, a large can of beef, three cans of sardines, one can "pati", and some well sweetened tea. There was no jam in any of three stores. Then I skinned out the only two birds we got today. Well, we did average a trifle better than one bird a day, but it was all in all a very unsatisfactory, not to say unfortunate, journey. The notes were the chief value.

June 9

The Chief of Papenoo says that the "Stranger" is Rupé, Moorea, August 7, 1921, one of Meho's insinuating notes; that Rao is a small Noha which lives in holes in cliffs. Rupi feeds upon fei. That helps explain things a little, but why couldn't we find Rupi?

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The Chief of Pagoono says that the "Stranger" is Hugé. Ngore, August 7, 1921, one of Hano's inaccurate notes; that Hao is a small Nuku which lives in holes in cliffs. Hugé feeds upon fish. That helps explain things a little, but why nonfish's we find Hugé?

We had the rear seat of the stage to ourselves. Found that Mr. Beck is still in Papeete. Spent the rest of day, after an hour or two at Beck's, going over my mail. Beck and Stephen got a rail.

June 10

Spent the morning putting bodies in four green herons, and in going over the birds to straighten out any lopsidedness. My specimens still have a tendency to twist their heads and tails askew. Found a mould commencing on base of some swallow bills. Preparing to go to Moorea.

June 11

Enroute to Moorea we came upon two shearwaters (P. auricularus) or similar, of which we yet have no specimens. One was noted by Mr. Beck as we returned from Rapa. Are they nesting here at Moorea?

We landed at the District of Afareaitu about ten o'clock. I put the baggage off the boat--all that was up on the cabin deck--while Mr. Beck went to see about accommodations. After the boat had left we discovered his Gladstone bag missing. I had not remembered seeing it on the boat at all. He either placed it somewhere away from the rest of our baggage or left it on the dock.

While waiting for lunch, I greased up my new shoes, tipi case, valise, etc., and sharpened tipi; also cleaned the guns and oiled them for a rainy afternoon. It was about one o'clock

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June 11

Enroute to Moores we came upon two albatrosses (G. cornutus) or similar, of which we yet have no specimens. One was noted by Mr. Beck as we returned from Supe. Are they nesting here at Moores?

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before we got away. I ascended the trail directly in rear of O'Reilly's place where we are stopping. Myna birds around plantations.

I did not hear anything until above fei beds, when a dove called now and then, and the kingfisher could be heard along the stream. Had no luck calling either of them, so climbed on up towards the cliffs above and to left of the bridal-veil waterfall, which is very conspicuous and decidedly beautiful. Hoping to find something about the cliffs, I worked on up to the base of them. While passing through rather dense "ieie" and "purau" trees which were over my head, I heard chickens take to the tree branches above. Peer as I would into the dense jungle above me, I could not see them. But the minute I moved to get a better view, a chicken would take wing. Six of them flushed. I shot at a couple, but the brush was altogether too thick. As I was scaling a slope of rock, a rooster, colored like the Papehue one, flew out from the trees just below. My position on the rocks was too precarious to permit shooting.

Not a sign of birds was noticeable about the cliffs. So I returned to the timber below and spent the rest of the afternoon "cooing" for doves. Succeeded in getting three into the trees above me. Two of them I got to shoot at, but one was too well protected by the large branch it sat upon. The third one I could not get to see for a shot. I stopped beneath another tree, taller than its neighbors, and cooed half a dozen times, getting no answer nor seeing anything. Then when I moved, a dove flew out of the tree, but I missed him.

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Dropped down into the canyon and followed the stream bed down to trail. Caught a "gekko" at some bamboo, when he crawled inside my shirt. Picked two varieties of land snails off the trees. It is hard to pass up anything that would be of scientific interest, but one must stop somewhere. We have received herbarium labels for collecting plants, and have been notified that equipment is being shipped. Heaven knows when it will arrive, but if we go to any islands we'll carry what we can, with newspapers for driers. Moorea promises to be quite as discouraging collecting as Tahiti. There is a native nearby who hunts chickens occasionally, and we'll see him tomorrow and try the ridges for shearwaters some day. The gendarme wanted to see our permits tonight.

Moorea

June 12

Mr. and Mrs. Beck left this morning in a cart drawn by one of those diminutive "land-running-pigs", which remind one of the probable size of the "Eohippus". The American Indian pony was a large animal as compared to these island horses.

Mrs. O'Reilly has done some inquiring regarding the list of desired birds which I gave O'Reilly yesterday. There are two men who know the hills well and are themselves huntsmen. I can get them to conduct me to the haunts of the more difficult birds to find. Noha is reported as nesting in numbers on a ridge belonging to a native. To avoid arousing his jealousy, and perhaps ire, she suggests that I wait until she writes him a message.

Dropped down into the canyon and followed the stream bed down to trail. Caught a "gecko" at some bamboo, which he crawled inside my shirt. Picked two varieties of land snails off the trees. It is hard to pass up anything that would be of potential interest, but one must stop somewhere. We have received herbarium labels for collecting plants, and have been notified that equipment is being shipped. Heaven knows when it will arrive, but if we go to any islands we'll carry what we can, with newspapers for driers. Moorea promises to be quite as discouraging collecting as Tahiti. There is a native nearby who hunts chickens occasionally, and we'll see him tomorrow and try the ridges for observators some day. The gendarme wanted to see our permits tonight.

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Perhaps he will, himself, take me directly to the nesting colony, and I will then have no trouble. I have offered fifteen francs wages for a guide, and five francs for each shearwater found. He may make good money, but I think the incentive of a bounty will get the best results. At five francs the birds would be cheap compared with our one very expensive Tahitian specimen.

For tomorrow I engaged a neighboring man to go out at four A. M. to hunt first "Moa aviri" (wild chickens), and later in the day what other birds he knows of. They report that Opeia (which may mean swifts as well as swallows) were once plentiful, but now extinct. They know of Omamo (flycatcher or warbler), but now rare. The hawk is here, and upon him they place the blame of the disappearance of the various birds. Rupi, too, is now rare or extinct, according to them. The cuckoo they know. Ruru is here,--I've heard him. The yellow-bill tropic-bird is in the mountains. Of the shearwaters and petrels, other than Noha, I can as yet get no information. I have proposed that the Noha proprietor conduct me to the colony one day, where I'll spend the night listening for calls of Rao, Upoa, Putu, or P. auricularis(?).

The Becks missed a splendid, native, cooked dinner. We commenced on curried prawn, followed by breadfruit, native greens with fat and coconut sauce, roast pork à la Polynesia, banana poé, and coffee with coconut cream,--all delicious, and I naturally overate. It is no wonder my health is so poor down here; I like the food too well, and lack self-control.

The news of our desiring birds and paying for them is

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The news of our departing birds and paying for them is

spreading. I have just been obliged to straighten out the idea that we want all the natives of the island to go on one grand bird hunt. I can almost imagine the condition of the birds that they would bring in. A white tropic-bird would be nicely soiled with grease and perspiration of their dirty hands. They do not seem fond of the idea of guiding me to the birds, but no doubt we'll find a few good guides who know just where to go. This Sabbath is a beautiful sunshiny day, ideal for bird hunting. No doubt tomorrow will be cloudy and rainy. The native church is nearby, and their "himene" comes chanting through the balmy air. Outwardly, they certainly have got religion.

The wasps have assembled about the houses in abundance this month. It is certainly the mating season. The females are of a brilliant orange yellow; the males are more greenish pale yellow, with black stripes making him appear quite dark. In the mating act they invariably drop to the floor or upon you if you happen to be beneath them. Thick as they are, they are not at all troublesome if a person just holds control of his nerves and doesn't go to fighting them. It might be disastrous should a pair drop into one's open shirt collar.

The Becks returned at a little before seven P. M. with the lost Gladstone and a few birds noted, cuckoo, yellow-billed tropic, ducks. White terns were above the trees during the day, and noddies in the evening and after dark.

June 13

About 3:45 A. M., after a sleepless night, I heard a

approaching. I have just been obliged to straighten out the idea that we want all the natives of the island to go on one grand bird hunt. I can almost imagine the condition of the birds that they would bring in. A white tropic-bird would be nicely soiled with grease and perspiration of their dirty heads. They do not seem fond of the idea of guiding me to the birds, but no doubt we'll find a few good guides who know just where to go. This Sabbath is a beautiful sunshiny day, ideal for bird hunting. No doubt tomorrow will be cloudy and rainy. The native church is nearby, and their "hymns" come floating through the balmy air. Outwardly, they certainly have got religion.

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The ducks returned at a little before seven P. M. with the last Blackbeak and a few birds noted, cuckoo, yellow-billed tropic, ducks. White terns were active the trees during the day, and noddies in the evening and after dark.

June 13

About 5:45 A. M., after a sleepless night, I heard a

whistle that seemed to be my rising call. My guide and I were served coffee and a boiled egg out in the open-walled but well thatch-roofed kitchen. By lantern light we proceeded up the trail I followed Saturday, until at an elevation of 350 feet he stopped amongst some fei, apparently to listen to Moa aviri crowing as daylight approaches. At five o'clock we heard several crowing to one another. Along the upper portion of the trail one kingfisher was aroused by us. Have heard nothing of shearwaters, although it is still early enough for them to be going asea.

Moorea is rather different in its stage of erosion from Tahiti. The main island of the latter, which is the extent of my observations so far, appears to have been a gigantic,volcanic, conical mountain with various craters of different sizes, noticeably the Papenoo, Punaruu, Fantana, and Vaihiria valleys. The many other deep canyons I would judge to be very likely fissures in the side of the great mountain. All the craters and canyons or valleys are in an early stage of erosion. The streams have nowhere near reached a grade. The Papenoo, which is the best graded stream on the island, has a fall of no less than one hundred feet to the mile. All the canyons are of the extremely sharp V shape, evidencing a young stage of erosion. Yet the work of the streams has continued long enough to open out all the craters and convert them into valleys almost beyond recognition.

In Vaihiria, however, the lower walls through which the stream cut have so recently caved in and dammed up the gorge to the extent of eight hundred feet that the upper portion of the valley has been drowned and the dam is far from being removed.

whistle that seemed to be my waking call. My guide and I were served coffee and a boiled egg out in the open-walled but well thatch-roofed kitchen. By lantern light we proceeded up the trail I followed Saturday, until at an elevation of 2500 feet we stopped amongst some fei, apparently to listen to the avifauna growing as daylight approaches. At five o'clock we heard several crowing to one another. Along the upper portion of the trail one kingfisher was aroused by us. There heard nothing of alocasia, although it is still early enough for them to be going away.

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In Vaihiria, however, the lower walls through which the stream cut have so recently caved in and dammed up the gorge to the extent of eight hundred feet that the upper portion of the valley has been drowned and the dam is far from being removed.

A three hundred foot dam I found in the gorge Darwin ascended from Point Venus, which I suspect has fallen since the visit of the great geologist, eighty-six years ago. It is such a striking feature of that gorge that he certainly would have noted it in his "Journal of Researches". -- The first green dove calls, 5:30.

Moorea has not those long gently sloping ridges of a former conical mountain. It is composed of a core of central peaks from two to four thousand feet high, with broad, gently sloping valleys proceeding inland to the base of the cliff-walled mountains. Such valleys appear to have been well formed by erosion prior to late sinking of the island, and the result on the north side especially has been the formation of two very noticeable drowned valleys, Cook's and Bay's. That Morea is steeper beneath sea level than Tahiti is evidenced by the nearer proximity of the coral reef and the wide passes opposite each valley where fresh water currents have kept an opening in the barrier reef. This is true at Tahiti only opposite the larger rivers, and the reef is several times farther from the shore. This is true, of course, only on the leeward of the island. I have not yet visited the windward, where I understand the reef is submerged.

The dove again calls. Roosters crow frequently. Daylight approaches and we'll soon go after the wild chicken. Will our collections settle the question as to whether these are native descendents from indigenous jungle fowl, or merely native fowl gone wild? It is believed that the Polynesians brought with them

A three hundred foot dam I found in the gorge Darwin mentioned from Point Venus, which I suppose has fallen since the visit of the great geologist, eighty-six years ago. It is such a striking feature of that gorge that he certainly would have noted it in his "Journal of Researches". -- The first green dove calls, 5:30.

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fowl and pigs. If they brought fowl and they have for several hundred years run free in the jungle, should they not have reverted to, or near the color and character of the original stock? The Polynesian is supposed to have migrated from India, the home of the jungle fowl, ancestor of our domestic fowl.

Two or three kingfishers are chattering their noisy farewell to the fading stars. They get in a rather plaintive tone once in awhile, but it is more of a saucy scolding, sharp, staccato chatter as a rule. It is a bit cool sitting here after having come through wet weeds and ferns along the trail above one's knees. One rooster is crowing rather profusely off in the direction of the place where I raised half a dozen Saturday. Just the morning star is now visible. Crowing becomes quite general. One rooster crowed perhaps a few hundred feet below us, but the native says, "Aita moa aviri!" They will declare up and down and horizontally that they can distinguish the real wild bird from tame chickens run wild. Yet we have observed three distinct color varieties of the so-called wild fowl.

Well, I guess they can, for here arrive two natives with a tame rooster which they had heard crowing just below us. With this decoy we may get some. But they went their way, and we went ours. We heard a crowing not very distant, and proceeded in that direction. The rooster crowed until we were quite close so we could judge fairly well which trees he was in. It was still quite dark, and although I saw a fowl move I could not again locate it. But the guide spotted the rooster (I let him bring the twelve gauge along), and old chanticleer fell from the tree tops at his

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shot. I watched for mine to move, but apparently did not see it depart. We followed another crowing and this time could see well. I dropped a hen and one or two flew away. The native dropped another and I missed a wing shot. Since then we have heard no crowing. Succeeded in calling one dove within range. Heard a bird, either flycatcher or warbler, so have spent much time coaxing for them. One came to a distant tree, and not promising to come closer I tried a long shot. Missed it. Looks like the warbler.

Later, a cuckoo (Orovea) came to a distant tree, but I could not get to see him, even after approaching the tree and making all manner of noises. Then I turned about and saw a motion of the tree branches overhead. The warbler! I aimed and fired, just as he hopped to another branch. Missed, of course, and two of them flew from the tree overhead but not so that I could take a wing shot.

We have just called another dove, the native shooting it with an auxiliary.

Ascended a stream to six hundred feet where we stopped to lunch, cooing for doves betwixt mouthfuls. Two flew into a tree above us and up stream we went after them. I got a shot at one on a large branch well distanced and took a second flying shot through the trees. They circled around and came back to a tree across the ravine. The native crossed and got one, but the other we could not induce near us. Proceeded along talus slope at base of cliffs, but saw no signs of bird life along them. Opeia seems to be quite scarce.

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Returned about one o'clock and skinned out the three chickens, giving the bodies to the native guide. It took me most of the afternoon to make up the three chickens, and was able to get only one dove done. Of the latter we obtained five during the morning, having called most all of them. Mr. Beck had worse luck,getting but three doves and two kingfishers, the latter decidedly lighter in color to the Tahiti bird. The dove is very similar. This island, thus far, promises to be no better than Tahiti, but it may be that the other end or other valleys are more populated by birds. We understand that the doves are eaten here. No doubt the Rupi was a delicate morsel also, and the hawk is not alone to blame for its destruction. The name of the hawk, "Amumoa", seems to signify that they commenced early to eat the natives' chickens. (Moa means chicken, and aum,to eat.)

June 14

Had breakfast at six and left with a native boy to find yellow-billed tropic-bird nests. He took me along the road northward beyond the second ridge from here, and went directly to a tropic-bird's nest in a pinnacle rock not many hundred meters from the road. That nest, which was a hole in which considerable sticks were placed, and a hole higher up on the pinnacle were both empty. Then we proceeded back around the second ridge and ascended that valley as far as the banana trail went, where we swung off to the side and ascended the talus slope to the base of cliffs where he investigated two more holes, but found them empty. As we proceeded along the base of this

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cliff, I frequently fired an auxiliary to see if I could scare anything out from above.

We observed one hawk up there when we were down below. As we ascended the talus, we obtained one kingfisher and one dove. The kingfisher was high and unremonstrative to my calling. I failed to injure one dove with the auxiliary and missed a couple at too great a distance for the shells. From a Papaya patch we flushed two chickens and later they flushed again, or it might have been two others. At the cliffs we saw no signs of bird life.

We returned trying to pick up doves and kingfishers along the route. Missed one of the latter at very close range with auxiliary. A very unsuccessful day.

At the beach, which we reached about two o'clock, I picked up a wandering tatler in winter plumage, sexual organs small, not very fat. How come that he got left when his fellows migrated? Why the lack of development in the sexual organs? Why the winter plumage? Here is one of the minor details of that most intensely fascinating study of bird migration. What lifetimes of study are still before the field of science in this one respect alone! Collecting and naming have had their day. Geographical distribution is having its spell of interest. But ecology is an untouched field and is not only one of the most interesting, but about the most beneficial phase of the biological studies, unless physiology be considered. How interesting it will be after these years in the South Seas, where the golden plover, wandering tatler, and bristle-thighed curlew

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winter, to spend at least one summer or better, a year, including two summers in Alaska where they journey to keep house a month or two and rear a family! Rain commenced seriously this evening and has continued steadily for at least two hours.

June 14

Last night's rain was so heavy that I gave up the idea of arising early and trying for jungle fowl during the dawn. The Noha man was supposed to be returning from Papeete on today's boat, so I remained to see him and make arrangements to spend a night in the mountains. He failed to show up, so the lady with whom we lodge went to see if Noha Number Two, who knows of a colony or nesting place on the Pierced Mountain, was at home. He was out fishing, so I ate lunch and left at eleven o'clock to search for warblers on the slopes of this valley.

Climbed slope to southward after passing through some very wet fields of Maapapa. The coconuts grow well up this slope. Neither saw nor heard anything of the birds. Wild pig trails and plenty of wasps and abundant mosquitoes. At the first creek bed which shows any signs of permanence. There are several streams still draining off the hillside from last night's rain.

There is a small tree in bloom, the blossoms of which are very strikingly colored a rich rose pink. There are four petals colored, innumerable stamens of similar color which make the showy part of the flower, and the short pistil which is also of the same color. The sepals are tubular or trumpet shaped, and united about the ovary. It makes an interesting splash of brightness amongst

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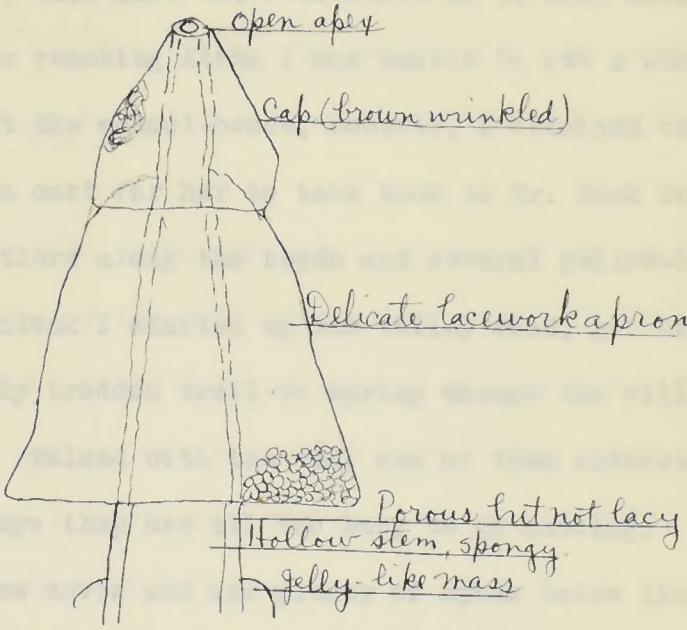
the domineering green of the jungle. A cloudy, misty day with no signs of bird life astir.

Proceeded up this stream to an elevation of 550 feet, and them swung off on the right hand side. Called a pair of doves, getting the first one with the long range shell, and the second one with the auxiliary for it came closer and closer as I called, no doubt looking for its dead mate. What a heartless job this is!

I found a very attractive mushroom.

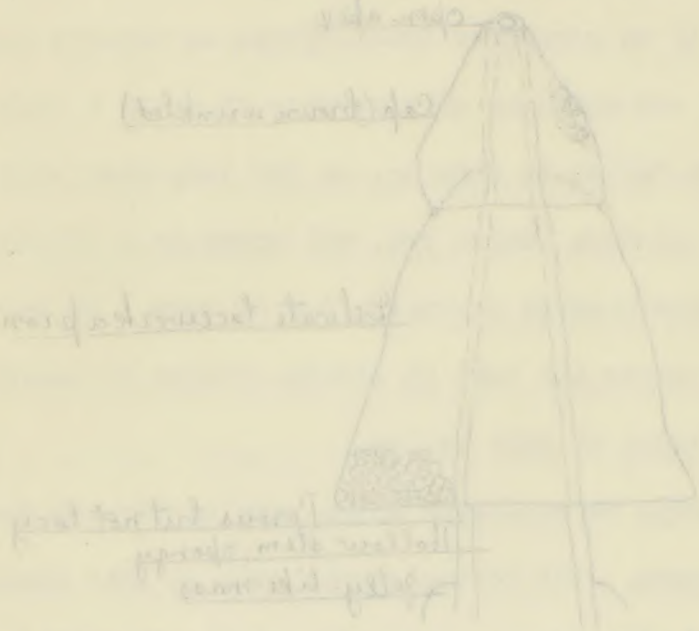


I obtained three doves and as I went in, I shot a myna. Our Noha men had failed to show up, but after dinner Mrs. O'Reilly went after one, and we engaged him to take me up to the Pierced Mountain colony Monday, it being too wet now making the trail dangerous. The native who took me chicken hunting Monday came over to get some shells and hunting blouse cotton. He is going after fei in the morning and desires to get us some birds at the same time. I gave him twelve shells and ten auxiliaries. He has an old Belgium shotgun, single-barrelled hammer; I hope it is strong enough for our cartridges. Mr. Beck got but a rat today.

the dumbfounding green of the jungle. A cloudy, misty day with no signs of bird life nearby.

Proceeded up this stream to an elevation of 800 feet, and then swung off on the right hand side. Called a halt at noon, getting the first one with the long range shell, and the second one with the auxiliary for it came closer and closer as I called, no doubt looking for its dead mate. That's heartless, but this is!

I found a very attractive mushroom.



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This is worse collecting than Tahiti, but we hear that Rupi is present in the next district. May it prove true!

June 16

(Atiha) The Mrs. drove Mr. Beck to Matea and me to Hapiti. I came equipped to stay or to camp out. She arranged for me to have a room at the school-house and to board with the school-ma'am. Mr. Beck shot one reef-heron as we came along the road. Just before reaching Atiha I was unable to get a shot at either of two. At the school-house, however, I obtained two, and these I put in the cart for her to take back to Mr. Beck for skinning. Saw two tatlers along the beach and several yellow-billed terns. At ten o'clock I started up the valley road, got off it and followed overly trodden trail to spring whence the village is piping its water. Talked with the men, one of them understanding English, but he says they are all too busy to go hunting.

Heard a few doves and saw plenty of mynas below limits of plantations. Shot one dove in fei belt. Ascended a fern ridge and at an elevation of 800 feet have stopped to breathe and observe. This valley is surrounded by a knife-like ridge, horse-shoe shape. Precipitous walls of rock characterize the summit except at the heels of the horse-shoe. The toe is well calked by a pinnacle of rock which rises five or six hundred feet above the ridge on either side. A few nails rise on either side, but they are on the same surface as the calk, which spoils the simile. Not a tropic-bird have I seen. One hawk has its eerie high on one of the nails to the west. Have heard one or

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June 16

(Atiha) The Mrs. drove Mr. Hook to Satna and me to Nagpik. I came equipped to stay or to camp out. She arranged for me to have a room at the school-house and to board with the school-ma'am. Mr. Hook shot one reef-heron as we came along the road. Just before reaching Atiha I was unable to get a shot at either of two. At the school-house, however, I obtained two, and these I put in the cart for her to take back to Mr. Hook for skinning. Saw two tailors along the beach and several yellow-billed terns. At ten o'clock I started up the valley road, got off it and followed overgrown trodden trail to spring whence the village is piping its water. Talked with the men, one of them understanding English, but he says they are all too busy to go hunting.

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two doves cooing. Mynas I believe I have heard, and perhaps a warbler or two.

Although we have had good weather this morning it now looks cloudy and threatening. There are several of these fern ridges like the frog of the horse's hoof, extending up to the rocky shoe. Well, I might as well try to get a bit higher up. This ridge seems to have been burnt off not long since. There are also two holes in the horse-shoe to the west of the center calk which have no nails in them. We would call them natural bridges in America, but really they are but holes through the narrow rock ridge.

Rain but not to amount to much. Worked my way up four hundred feet farther to the base of the horse-shoe cliffs just below one nail hole. There lantana stopped my progress. Saw nothing and heard nothing there in bird life. Just after leaving the open fern ridge I heard some weaver birds go overhead, but I was in thick ferns at the time.

Returning, I picked up two doves and missed another at about five or six hundred feet elevation in fei belt. A kingfisher, startled by my shooting a dove, scolded madly, but working upon the principle of one bird at a time I paid no attention to him until I had picked up the dove and returned to where I had been eating an orange. Then I looked in vain for him. After giving up finding him while still, and being unable to get a sound from him while coaxing, I shot an auxiliary and he flew out from a branch not ten feet from me, but so quickly got into the tree tops that I did not get a shot. These Morea birds are

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much better adapted in coloration to the tree branches they perch upon than the Tahitian bird.

The map names the pinnacle forming the west heel calk or nails of the Haapiti valley horse-shoe ridge Mt. Atiati and gives it 2445 feet, which would double my estimate of its rising above the surrounding ridge which is perhaps 1400 feet. The toe calk of horse-shoe is Mt. Monaroa, 2948 feet.

Had dinner this evening with the schoolma'am, a very pleasant native girl more intelligent than the average. She speaks Native and French, of which I have no speaking language, but my Native is improving somewhat. When we got into difficulties of conversation I had to look up the native words in my handy dictionary and explain in that manner. Spent three hours on three doves, but talked a lot.

June 17

Went to the river last evening and had a bath, after which I slept fairly well. This morning I plan upon trying the next valley to the northwest V. Uufau, R. Tepahu, below Mt. Tiura, 2442 feet high. I hope I have better luck with the kingfisher. I heard but few yesterday while hunting. One chattered late into the night not far from the Chief's house where I am rooming. Myna birds seem to be better established here than at Afareaitu, noisily chattering from the coconut trees. The average tourist visitor to Tahiti thinks there is but one bird in the country, so evident are the myna. Some notice the little weaver bird, but not sufficiently to detect the two or three species present.

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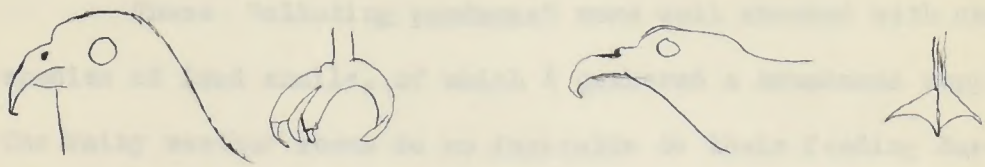
There is little hope of obtaining the green heron here where all the streams are so small. But they may be around on what appear to be larger rivers flowing into Cook's and Tareu bays. Mt. Tohivea looms up above the ridges and beyond them. It is about one thousand feet higher than its nearest competitor on this island, Mt. Mouaroa, named perhaps after the yellow-bill tropic-birds which nest there but not at this season. I have not yet seen one on this island. The lower ridges, the heels of the shoe, are brushy. A boy went along with me. A native about thirty gave me this information:

Opu noha--Rupi. (Locality to be found.)

Vaianae--Omamao.

Along the road I took a flock shot at some myna birds, killing two. These I carried all day until I had plenty of doves and kingfishers to keep me busy until well into the night. Concentrated upon kingfishers and obtained four of the dozen or so seen. Had my auxiliary shells not been a sputtering lot, I would have procured three or four more and a few more doves. The auxiliaries were bad, about four of five. They had no power whatever, and would not kill tender skinned doves and kingfishers twenty feet or less distant.



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Opa mona--Bugi. (Locality to be found.)

Valanga--Tamano.

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of the dictionary is a very bothersome process, and conversation seemed to be demanded. These natives are apparently quite interested in what poor singing I can do. They are easily amused by imitation of animal calls, especially a Tom cat.

June 18

Slept late, but coffee was later. A slow drizzling rain is falling. Not much chance for good collecting. Obtained a ride gratis to the valley of Vaianahe. Ascending it I could hear a pack of dogs baying at a pig very near the trail. I had a notion to join the hunt, but refrained. Later I met the huntsman coming down the trail at a rapid pace with his spear.

Found my calling of kingfishers worked better today than usual. Dropped two from the tops of tall trees, whither they had flown at my calling. Find myself short of cartridges, but have enough for one good day's hunt. Slow drizzle of rain all morning. I called two doves within range, but the auxiliary failed to injure them. Ascending on up the valley and frequently calling for the Omamao (warblers?) which several natives assure me are there present, I finally reached an "ieie" thicket which barred further progress up the ridge I was on.

Those "climbing pandanus" were well stocked with one species of land snails, of which I gathered a bounteous supply. The rainy weather seems to be favorable to their feeding during the day. These snails appear to be all of one species regarding the shape of the shell, but several color variations were found, from quite white and brown to striped ones.

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June 12

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Here I sat down and called a dove, and much to my surprise the auxiliary cartridge killed it. Suspecting a Rupi everywhere I have tried to call them, but always with the result that the little fruit pigeon (Ptilonopus purpuratus ?) comes to investigate the strange noises and never the greatly desired Rupi or large dove. The natives and Frenchmen claim that twenty years ago there were plenty, but that they have rapidly decreased as the imported hawk has increased. These are, no doubt, correlated natural facts, for the large pigeons would be the most natural prey of the hawk where animal food is more scarce than bird food.

The kingfisher here builds its nests in the trunks of dead trees, making holes very similar to those of our woodpeckers, which fact leads the Europeans to consider them as members of that family. One today scolded me at my approaching too near him. I knew he was well within auxiliary range, so I stopped and for several minutes searched the vicinity from whence he had chattered, but in vain. So well are these birds protected by their coloration that one's only hope of seeing them is to see them move, or perhaps find them silhouetted against the sky line in the top of some large tall tree, where their presence is always to be suspected. When perched, they sit very erect and have a very perky appearance. The native boys when I was skinning them pointed out the males and females with unfailing accuracy. I have six before me. Two of the three females are considerably lighter colored above than any of the males. Two of the latter are considerably darker than the females. But the third female is very nearly as dark as the third male. The underparts of two of the males, one of which is the

Here I sat down and called a dove, and soon to my surprise the auxiliary decoyed rifled it. Suspecting a Hugl everywhere I have tried to call them, but always with the result that the little fruit pigeon (Ptilonopus superbus ?) comes to investigate the strange noises and never the greatly desired Hugl or large dove. The natives and Frenchmen claim that twenty years ago there were plenty, but that they have rapidly decreased as the imported hogs has increased. These are, no doubt, correlated natural facts, for the large pigeons would be the most natural prey of the hogs where animal food is more scarce than bird food.

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third, have very little dark feathers across the breast. The three females grade from medium to quite dark, while one male is very dark on the throat. How, then, do these native boys distinguish the sex externally. I would not venture a guess.

At an elevation of seven hundred feet I attempted to work along the hillside. It commenced to rain, however, and so I stopped beneath a tree and ate lunch. There go three wandering tatlers across the lagoon! It rained steadily and heavily all the while I slowly ate my lunch. Having finished, I decided it useless to try further for land birds, so descended. Saw a silver-spangled rooster disappear into the jungle below me, but was too slow to get a shot at him. Saw nothing more until well down the valley when I was calling kingfishers. One came flying overhead. I tried him in the air. Made a beautiful shot but dropped him somewhere in the midst of a lantana thicket whence there was no hope of retrieving him. Here I again met one of the native pig hunters carrying a little shoat of about fifteen pounds weight.

I proceeded along the shore of the lagoon without seeing a bird until I arrived at the Hapiti wharf, on which was a tatler. He took wing long before I reached him, but at my call flew close enough for a shot which missed him cleanly. Two noddy terns cut into shore from the lagoon at a point far beyond me. Later, a yellow-bill flew past, well off shore. When I got before the Chief's house a tatler came to a spit of sand and I obtained him, still in winter plumage. Four reef herons stood upon a shoal cut in the lagoon near the channel. Two boys who came when I shot

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the tatler paddled me out there in a canoe (vaa). I tried a pot shot but winging one of three in a line. One of the three uninjured returned to the shoal and fell a victim to his folly and the other barrel.

The tatler was a male showing no signs of swelling sexual organs, apparently a young bird. Is the change of plumage closely connected with a development of the sexual organs? I am going to pick them up whenever possible. I would consider specimens now of far greater value than those taken during their regular season here. These are the exceptions to the general run of nature, and should be an interesting study. What an interesting myth is that of the Polynesian natives concerning their origin! They hatch from the bubbles of the sea! Indeed it is a bubble, beyond the ken of many wiser men than these natives, from which Torea comes to Polynesia for the winter season. Far off Alaska, its only known breeding place, is quite a bubble, and not much more in the minds of these people. After a few winters down here, I will simply have to go to Alaska to observe them there.

The tatler was altogether too bloody after skinning to make a specimen without an overly large amount of washing. One heron was also spoiled, or at least would have consumed more of my scarce corn-meal than the skin was worth. The natives are apparently quite fond of them as food, though the one we tried at Marquesas was a bit strong and tough. For dinner tonight I had the bodies of yesterday's doves. Very good but tedious eating. Since coming here I have tasted no vegetables. The natives, who live for the most part upon fish, fruit and vegetables, seem to

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think the "Papa" likes only bread and meat. They buy expensive canned beef, when fish and breadfruit, fei and taro would be greatly preferred.

June 19

Here comes the curious group of natives with their jabbering and giggling, to surround the table so closely that no light can penetrate through them. How to dispose of them without offense is a serious problem. To pay no attention to them has no effect whatever, for they are perfectly content to stand around and make their own comments concerning the "papa" and his actions. Having nothing to do, like idle children, they are quite satisfied to just stick around and look in. If there be two or more, however, they keep up an almost continual talk. Or if you have tried to entertain them once with song or other form of amusement they will try to get you to stop your work and amuse them.

Yesterday's rain ceased during the night, but we have had one shower already this morning. Tatlers were heard along the lagoon shore, and three seen in a flock flying over lagoon. A few yellow-bill terns were seen close in to shore. Weaver birds also heard. An occasional kingfisher chatters. Mynas as noisy as usual wherever they are present. The English sparrow is quite a decent little chap compared to these irksome pests.

I made quite an error yesterday when I sent a note to Mr. Beck to cancel the horse and cart. I have not enough cotton

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to make up a dozen more birds, nor corn-meal for half that number of fat ones; while cartridges are very scarce, and auxiliaries unreliable.

When I stopped here at the Chief's house I was struck by the trim appearance of his lawn. By trim I mean the closely mown, even shaved, condition of it. Beneath the acacia trees are two large barren spots, but around my corner there is considerable grass. Of course the neatness is quite upset by the many crab-holes that perforate the green, wherein lies the secret of the well cut grass. As I sit here writing I observed the hidden secrets come to light in the form of U'a, the coconut crab. Around their holes are barren circles where they have piled the dirt dug up from below. They proceed from these havens of retreat no farther than is necessary for procuring their provender. Here is one walking sidewise, with suspicious, alert eyes, and threatening claws which he frequently uses as feelers. Now he finds three or four blades of grass an inch or more in length,--rare discovery! He stops and proceeds to pluck the blades and pass them to his sidewise opening mandibles. It is the most human action I ever observed in lower animals. But then these same animals, so utterly unlike us in outward appearance and physical structure, have another phase of resemblance.

From a neighboring "apo", some two feet distant, comes another "U'a". He, too, desires a bite of green fodder. Carefully, cautiously and curiously he approaches U'a number one. When within a few inches he makes a sudden start, and there comes the click of hard claws against hard claws. U'a number one, being

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smaller, retreats and leaves two blades of delicious grass to his impolite neighbor. It is the battle of life, the struggle for existence in which crabs are crabs, whether they walk sidewise on eight legs or forwards on two.

It certainly is true that the wasps come into the houses in May and June. This porch is alive with them.

Just finished another abominable tin-can meal, with breadfruit, fei and bananas, papaya rotting on the trees. Whatever has given the natives the idea that we "papa" do not like their vegetables and fruits,--the Frenchmen?

Three myna birds have just taken their bath in a shallow pool of clear rain water and now are perched in a nearby tree preening their feathers. Now they hop up to the topmost branches to get sunshine and breeze for drying their feathers. As I sit here writing, I can hear the crabs pulling grass with a snappy, carcking noise. Myna birds have been bathing all afternoon. Saw but one or two terns over the lagoon all day.

My request for vegetables brought forth a breadfruit well cooked, and upon the better half of it I dined this evening. I have sent out feelers for a native boy to carry my outfit up the Vaiariahe valley tomorrow. It will be worth the thirty francs to spend one night in the bush listening for late evening and morning bird notes and possibly shearwaters during the night. Such an excursion should give this valley a fair test for the presence of Rupi and Omamao, which the natives claim are there. I have offered additional pay for taking a rooster along to crow in the morning.

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I have secured for a guide the native whom I met yesterday with the spear, rushing to the baying pack of dogs. I judge him to be about the best I've seen in this district. He will find Omamao for me, and plenty of Moa aviri. Tuesday afternoon I shall probably return to Afareaitu.

Spent most of today writing letters, having neglected to bring a magazine with me for reading. It would probably be a good thing not to take reading matter along wherever I go. I might produce something them instead of merely consuming. There is something strange about nature, that the lowest forms of life plants are the only food producers, while we higher animals are entirely consumers. How fortunate we are that the plants are sturdy contestants for the field of survival and so greatly over-produce food!

June 20

Spent a rather sleepless night after writing late. Had coffee at eight o'clock. My man arrived shortly before, and a boy from here who is going along to take charge of our decoy rooster. The rooster is surly a dandy. We have stopped twice along the road, and as soon as he has been placed upon the ground, he has flapped his wings loudly and crowed vociferously and continuously. We are waiting now for the hunter to catch up,--he stopped for something at his home. Our decoy rooster and one of the plantation whereat we rest are having a regular bull-fest.

This promises to be an interesting and instructive

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June 30

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This promises to be an interesting and instructive

expedition, especially regarding native methods of hunting the wild chicken, as we will also set traps and snares. Today's objective, however, is the warbler, Omamao, which the guide says he will find for me.

Our decoy crows: the first minute, three times; the second minute, four times; the third minute (forty seconds), three times and one flap, when the plantation cock arrived within view, ready for fight and battle-scarred from previous engagements, so our decoy was picked up. He had been crowing several minutes before I commenced counting. He now crows from his guard's arms. The guide arrives, accompanied by a pack of seven hounds. We may also have a pig hunt, for he brings his spear along.

We proceeded up the trail I followed Saturday, but kept the trail where I turned off to the left. Made camp beneath some orange trees, the balloon-silk fly tent proving much less bothersome than building a native "fare ra fei". In fact, we had a commodious shelter, four by three meters, erected in about twenty minutes, and were eating lunch in less than half an hour after stopping. There came a baying of hounds signifying game. Off rushed the rest of the pack, and ere we could finish our lunch the baying horde of mongrel dogs approached us. Off rushed Himata with his spear, giving orders for Ata to bring the tipi. I changed the cartridges, putting in two charged with heavy buckshot, but was too late at the chase. I was in time, however, to see Heimata waiting with poised spear as the worried pig, surrounded by the nipping hounds, approached. At the proper moment he made a thrust and the pig went down with the spear head

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piercing his heart, the shaft broken at the "hilt(?)". After the dogs had their pleasure of chewing tough pig skin until puaa gasped his last. I looked at my watch,--only forty minutes after we had stopped, and we had a fifty kilo hog to feast upon! The boys carried him down to the stream. Heimata remained in camp. Ata and I, with Moa faamu, proceeded on up the trail. Our first find was a young chick with the first wing feathers just showing up. We heard him peeping from across the creek and had little difficulty in following the call. He made a desperate effort to escape when he saw me, but I easily caught him. Now we have two decoys, for we are carrying the duck in a pocket.

The trail led up a fern-ieie ridge to an altitude of eight hundred feet, when it went off into a side canyon and disappeared. There the green doves were very plentiful and came close in at my call. The auxiliary failed to kill about ten, all within twenty feet, and one as close as ten. This box of cartridges has no power at all. There were kingfishers present too, but try as I would I could not get to see one.

We have returned down trail to about where the chick was found, and have Moa fuamu performing from a low tree branch. One wild fowl answers far off to the northwest, about where I flushed the rooster Saturday. Coming up the trail this morning, we flushed a hen from some oranges, but could not get a shot at her. I got mad and used a number eight cartridge on one dove, which is the sum total of the day's hunt, although we may get some fowl this evening. Sunshine and clouds, mostly the latter, with considerable wind all day.

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Returning via "fare", Ata and I went up the ridge I followed Saturday, looking for chickens. One young chick well grown and able to fly was just beyond a large tree. I had sixes in the gun. I let him run as far as he would, but he took wing and I failed to drop him, firing through the leaves. We had the rooster crowing later at length, but got no answer so returned to camp. Heard a cuckoo, and while I called for him in vain the boy went off after some chickens he heard. He says he saw three hens and a rooster. Down the trail a little farther the cuckoo scolded us and posed for a still shot.

As we approached the house, considerable crowing came from that direction. Lo and behold! there were three boys besides the guide, Heimata, each with a rooster. What a crowing there will be in the morning! One boy has gone after a crowing wild fowl now, while the rest of us turn to our puaa aviri à la Tahiti. The boys had some "miti" (seawater and coconut milk) to dip their pork and fei into, but I don't like the salty sauce. Buttered fei suited me quite well. Heimata seems to have taken most of the pig to the village or to his home, leaving enough in the oven for five of us and all the trimmings which they cooked for the pack of eleven hounds, as they counted up for chow. A kingfisher joined the chorus of chanticleers tonight and I found him. So the day's catch amounted to one dove, one cuckoo, one kingfisher, and the baby chick. After we had dined to satiety, several fei leaves were made into a trough, and into this the remaining sauce and considerable water was placed. Then all but a few fei for morning were peeled and mashed up with the pig trimmings for the

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hungry pack.

At camp we had but made down the bed when a heavy shower tested the balloon silk. Against my better judgment I placed it with the seams crosswise, for as we cut it but three meters lengthwise it is wider than long. The result is that a little rain works through one of the seams and of course directly above my face. But otherwise it is all O. K. and affords sufficient shelter for the five of us and half a dozen at least of the dogs. The boys failed to get the rooster they went after about dusk, but claimed to have seen him. I wonder how many they will bring in tomorrow.

Taps, or it may have been quarters, was sounded by our four piece trumpet corps at midnight. Not California roosters alone have that habit. Our chanticleer buglers aroused us with first call at four, reveille at five, and assembly at five-thirty.

June 21

The four owners of the buglers set off in two pairs, one set going up the ridge we were on last evening, the other crossing the creek and proceeding in an opposite direction, where Heimata and I have just come upon them. They have left one rooster and expectantly are awaiting results. He has ceased to crow. His owner now creeps cautiously to observe actions. The boy wears a strap around his middle and a hat upon his head, the nearest return to nature I have yet observed amongst these natives. But the conflict failed to develop. A hen approached the tame rooster but before I arrived with the gun she took wing. This fighting

hungry look.

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The four owners of the dogsers set off in two pairs, one set going up the ridge we were on last evening, the other crossing the creek and proceeding in an opposite direction, where Solomia and I have just come upon them. They have left one rooster and expectantly are awaiting results. He has ceased to crow. His owner now creeps cautiously to observe matters. The boy wears a strap around his middle and a hat upon his head, the nearest return to nature I have yet observed amongst these natives. But the conflict failed to develop. A man approached the lone rooster but before I arrived with the gun she took wing. This flighting

method of the natives catches but the cocks, which probably accounts for the fact that the fowl hold their own against the inroads of the greatest enemy of all life, the Genus Homo. Later we came across one of the other boys. His decoy had broken his tether and had escaped into the dense jungle, whither there was no coaxing or chasing him. The boy was making a trap to retrieve him as we left.

We hunted in vain all morning for the warbler. Failed to flush or find fowl. Was unable to locate kingfishers, except one which I missed by aiming low to avoid giving him the full charge of shot on account of his nearness. Obtained one dove with an auxiliary, the first of more than a dozen shot at within close range.

Returned to camp and decided that this valley had consumed its portion of my time, so pulled camp and departed. The guide claimed to have seen two warblers while following his dogs once when they were hot on the trail of a pig. It was very disappointing not to find them, nor to even get a wild fowl--the natives claim the red variety prevails here. So arriving at the Chief's house the boy Ata produced a red cockerel he claims to have caught at the head of Haapiti valley. I gave him three francs for the skin, and had a tough job getting it off the body.

The island gendarme was here this afternoon so I sent a message for a conveyance, having run out of cartridges, cotton, and corn-meal.

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The island geniuses was here this afternoon so I sent a message for a conveyance, having run out of partridges, cotton, and corn-meal.

June 22

It was too windy last night to finish making up birds, so I retired at the fall of darkness. Awoke this morning at four. Still windy, so wrote letters until daylight. Made up the cuckoo, rooster, and two doves and packed everything securely for trip back to Afareaitu.

Along the route I tried a shot at a yellow-bill tern, but was too far away. A native of Rarotongo, the boy who spoke English from the water ditch last Thursday, is climbing a tree to get me a coconut to drink. He has married a native girl here, but what a difference he must find this from a British colony! A very windy day which I hope will bring good weather for climbing to Noha's haunts on Monaputa.

Have decided to ascend the valley of Ahutai which lies between Mateia and Vaianahe; a native says the Omamao is present. I hired the native and we struck up the trail at a rapid pace. Watching my footing (tennis shoes and mud are a bad combination), I failed to notice that what I supposed to be a fluttering leaf was, in reality, a dove. The native, too, passed it, and then we turned to see a young dove fluttering over the ground disappear into the jungle, whence we could not flush him. An old dove in a tree eating was too far away for the worthless auxiliary cartridges, and too close for larger ones.

Proceeding up the trail we met a native returning with fei, who informed us that Omamao was present, but no Rupi. The latter, he said, we would find in the Punaruu valley of Tahiti. I wonder how many years ago he saw them there where we found

June 22

It was too windy last night to fly kites making up time, so I retired at the fall of darkness. Awoke this morning at four. Still windy, so wrote letters until daylight. Made up the cuckoo, rooster, and two doves and packed everything securely for trip back to Lareesin.

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only doves, kingfishers, and swallows. All along the trail I kept calling for song birds, but had no result until at an elevation of eight hundred feet, when I heard a pair in some orange trees. The first was less than twenty feet away, but the auxiliary, which sounded fairly strong, did not injure him. It was a dead easy shot and no excuse for a miss. Later, the second one was but ten feet or less away, and an auxiliary phased him not at all. Thank Heaven, this box of worthless cartridges is nearly finished! I'll finish the rest by using them for scare shots. At some orange trees farther along the side hill, another bird was seen. I shot at it within easy range and missed by a sputtering shell.

Returned down the valley to find Mrs. O'Reilly waiting for me, but she had not yet gone to Hapiti; so I struck out along the seashore, picking up three tatlers, one with a changing plumage, and a yellow-billed tern. I reached Mateia and had a bit of jam and cake while awaiting her arrival. Along the road I amused the madame by singing my short repertoire of songs and yodeling. The natives got a great kick out of my yodel, so did Rupi, her horse. He broke for home and it was all she could do to handle him. Several times I thought he would upset us along the road. She went to see the Noha man, but seems to have been unable to find him.

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BOOK XVI.

Moorea

June 23--July 24, 1921.

June 23

We were considerably delayed this morning by a bread shortage. At seven o'clock as we ate coffee the bread was to be ready at eight. At that hour it had "gone in the oven" and would be ready at nine. At nine it would surely be ready at ten. We got it at eleven after having purchased a few crackers of Chinese make. My guide has a companion who is going along with us, carrying half the load on the hopes of making wages at five francs a bird. I hope he makes good wages. Before leaving, I wagered five francs with Mrs. Beck that we would find a Noha; this shearwater hunting in these mountains is getting to be a joke.

Had a streak of real luck after proceeding but a short distance into the woods. Obtained three kingfishers with two shots of number tens. We are ascending at a rate of about one hundred meters every half hour, which isn't at all bad under a noonday sun and through brushy, clayey trails. Orange trees and a good cool face wash at a thousand feet was very welcome. No signs of birds since the kingfishers, one or two more of which were seen.

At an altitude of fifteen hundred and a few odd feet, we leave a little stream to ascend the ridge where Noha dwells. May they dwell there now in plentiful numbers! It is but one-thirty P. M.,--three hours or less since we left Afareaitu. The last three hundred feet have been chopped out of the "ieie" which covers the hillside at this altitude. There are also a few ferns, tree ferns, fei, and that tree with the lowly branches and leaves on long stocks with thirteen leaflets, and yellow flowers with the calyx tubular and deep bell-shaped. We saw a hawk encircling Noha ridge as we approached, but were unable to coax him within range. There is probably a breeze coming over the ridge from the manner in which he was soaring against it. Whatever dislike we have for their voracious habits, we must admire their graceful mastery of the air. The tropic-bird alone, to my knowledge at least, can be compared to the hawks and eagles, condors, and vultures in the art of soaring; the albatross and gulls lose out in altitude.

Where we finally stopped was on an abutting ridge which forms the readiest ascent to Monaputa, the pierced mountain, at an elevation of 1825 feet. Here the guide claims Noha abounds. Well, by the looks of the brush, it will take a decidedly lot of hunting to find many burrows. We ate dinner at two-thirty, four hours from the time we left Afareaitu. The red-rumped weaver bird I have heard repeatedly, but cannot call one close. There came the biggest surprise of all in the undeniable piping of Meho, the rail, during the pause as the men were rolling a smoke, prior to commencing their search for Noha. That adds to the

At an altitude of fifteen hundred and a few odd feet, we leave a little stream to ascend the ridge where Nome dwells. Say they dwell there now in plentiful numbers: it is not curiosity P. M.,--three hours or less since we left Arapaolin. The last three hundred feet have been chopped out of the "tiele" which covers the hillside at this altitude. There are also a few terns, tree terns, fal, and that tree with the lowly branches and leaves on long stocks with thirteen leaflets, and yellow flowers with the calyx tubular and deep bell-shaped. We saw a hawk soaring Nome ridge as we approached, but were unable to come big within range. There is probably a breeze coming over the ridge from the manner in which he was soaring against it. Whatever dislike we have for their voracious habits, we must admire their graceful mastery of the air. The tropic-bird alone, to my knowledge at least, can be compared to the hawks and eagles, condors, and vultures in the art of soaring; the albatross and gulls lose out in altitude.

Here we finally stopped was on an abutting ridge which form the readiest access to Nome, the placed mountain, at an elevation of 1820 feet. Here the guide claims Nome. Well, by the looks of the birds, it will take a decidedly lot of hunting to find many burrows. We ate dinner at two-thirty, four hours from the time we left Arapaolin. The red-rumped monarch bird I have heard repeatedly, but cannot call one close. There came the biggest surprise of all in the unmistakable piping of Nome, the rail, during the pause as the men were rolling a smoke, prior to commencing their search for Nome. That adds to the

difficulties of our Moorea collecting. Here there is no favorable spot for burning the fern brake, "Aihere", in which the upland members of that species dwell. Across the valley, however, whither we go for tomorrow night's camp, and down at about twelve hundred feet I can see some wide stretches of ferns. If we have no rain from now until Saturday perhaps we will be able to burn a large circle there. Then by burning in the enclosed piece we may be able to find one or two of the highly desirable, difficult-to-find birds. Here is a bird present whose existence on this island all the natives have so far denied.

The best place we can find for the night is a level bit of moss-grown ridge not wide enough for two to sleep together, so we will string along it singly. I managed to get the three kingfishers made up before dark and each of them required some washing. There is no water present so I tried lemon juice, which will take Higgins' water-proof ink off a coat, or blood spots off clothes. It seemed to clean away the blood and fat,--all these birds were very fat,--but whether it will leave a stain or not is a question. Towards evening there was another surprise for us. A Rupi called from the ridge across the ravine, if that was Rupi we heard at Vaihiria.

6:45. Two calls of Noha to seaward and windward and eastward. They were very far apart, simple whistles.

Two hawks up above the main summit refused to pay any attention to our whistling. One also soared along the ridge eastward. Another very distant Noha call. It was rather difficult skinning and wrapping birds without a table and in frequent gusts

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6:45. Two calls of Ibis to seaward and windward and eastward. They were very far apart, simple whistles.

Two hawks up above the main summit refused to pay any attention to our whistling. One also soared along the ridge eastward. Another very distant Ibis call. It was rather difficult skulking and stopping birds without a table and in frequent rain

of wind. Another and another distant Noha. One approaches. A lull of several minutes, but then, it is just seven o'clock and early for them. There's a distant call, very distant, but frequent. Two or three calls from the ridge east of us, and now some up the mountain above. That's our field of labor for tomorrow. I wonder if the distant calls are not probably calls from mates within burrows. The boys are quite excited because one bird has been calling at length about the mountain side above us. "Swurseeee-ee-ee" whistled just about describes this call.

There seems to be a new entry in the field now. Still that distant call. (Almost too windy for my candle to burn.) From the way this one bird, or it may be a second one now, seems to fly about this slope of the hill calling, I would surmise that they have quite a difficult time finding their burrows, but not quite as hard a job as we do who cannot fly!

My berth is very interesting. I cut it out of ferns and ieie. As I write, I occasionally slide off the ridge until ieie stalks stop further sliding. There is a drop of close to fifty feet here, not quite sheer, but steep enough to require leaning well out to see bottom. If I roll in the night I hope the ieie prove as strong as I believe them to be.

That one Noha still calls about the hillside. If it takes him half an hour to find a burrow when mate or young are there to answer his call, how long will it take the three of us to find it? Especially if it be the only one on the whole mountain. But I hope to hear many more birds as the night progresses.

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They are no more numerous here, judging by calls, than they were at Hamutu. (This single-file sleeping is going to be much cooler than five in a bed and eleven dogs around the edge of it, as at Vaianahe.) Meho trills briefly.

From my observations today I would say that Moorea is a much older mountain than Tahiti. What a regularly sloping cone Tahiti presented today while its rugged, broken-up summit was hidden beneath a great cloud bank! There is not a sign of any valleys there being drowned. All its present stage of erosion seems to have been accomplished since the subsidence which is hesitating at the present level.

This island, on the other hand, presents a decidedly different aspect. The bays of Afareaitu and Teavaro present a decidedly drowned aspect. Tomorrow we may get high enough to see those better examples on the north. At Puahonu I noticed the stream bed bottom was coral rock, which at one time must have been part of the lagoon, the edge of which is several hundred meters away. At the present level, these valleys have been for the most part filled in, but that would not take so long with coral growing up in the bay, and streams washing down sediment. Looking at Mt. Tohivea from here, one sees a suggestion of the old sloping sides of this mountain. Layers of lava exposed commence at the inner edge of that peak and extend down towards the sea at a very regular slope from an elevation of about two thousand, leaving as much above which seems to have been irregularly removed by erosion. Mt. Monaroa on this side is very bit as imposing as from Hapiti. Atiati takes an irregu-

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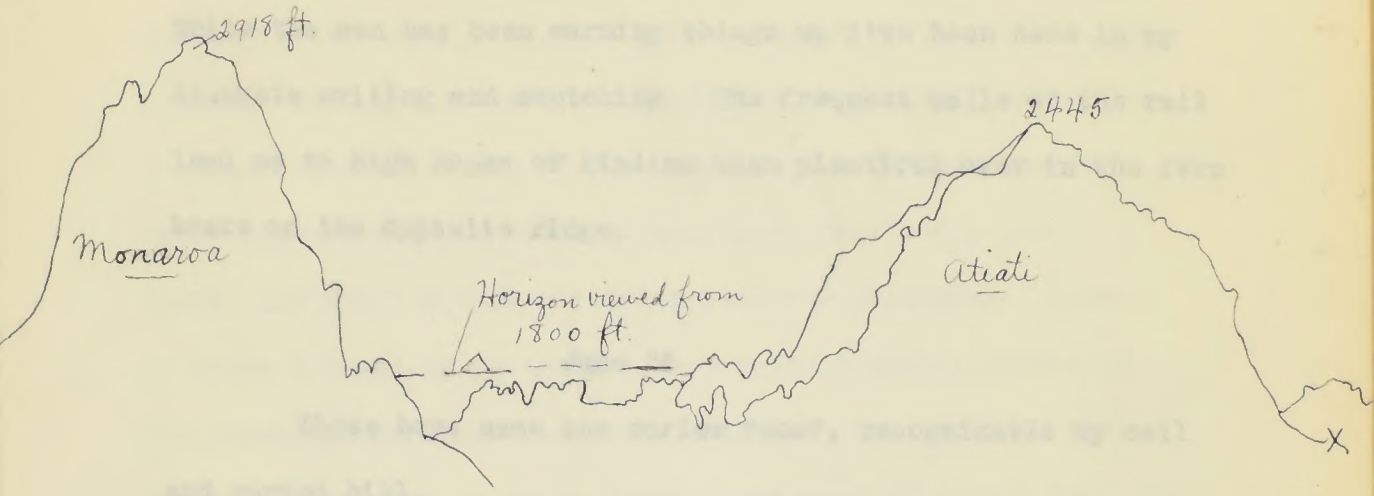
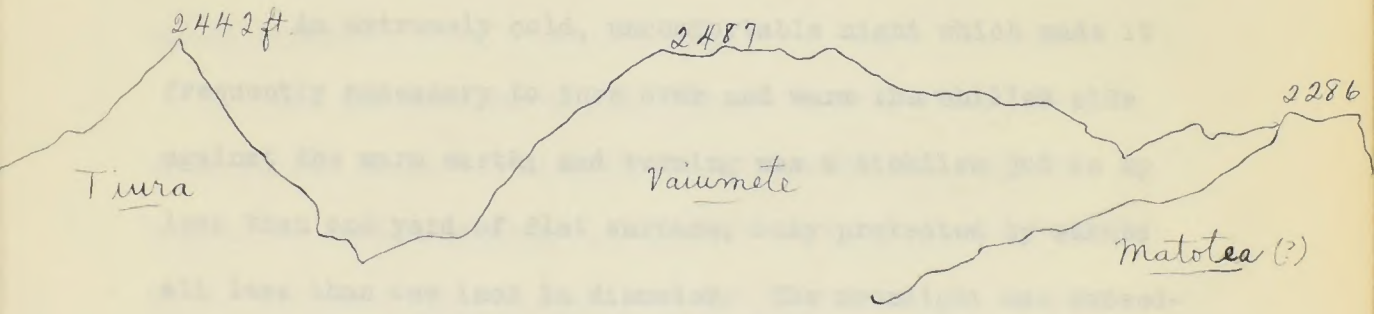
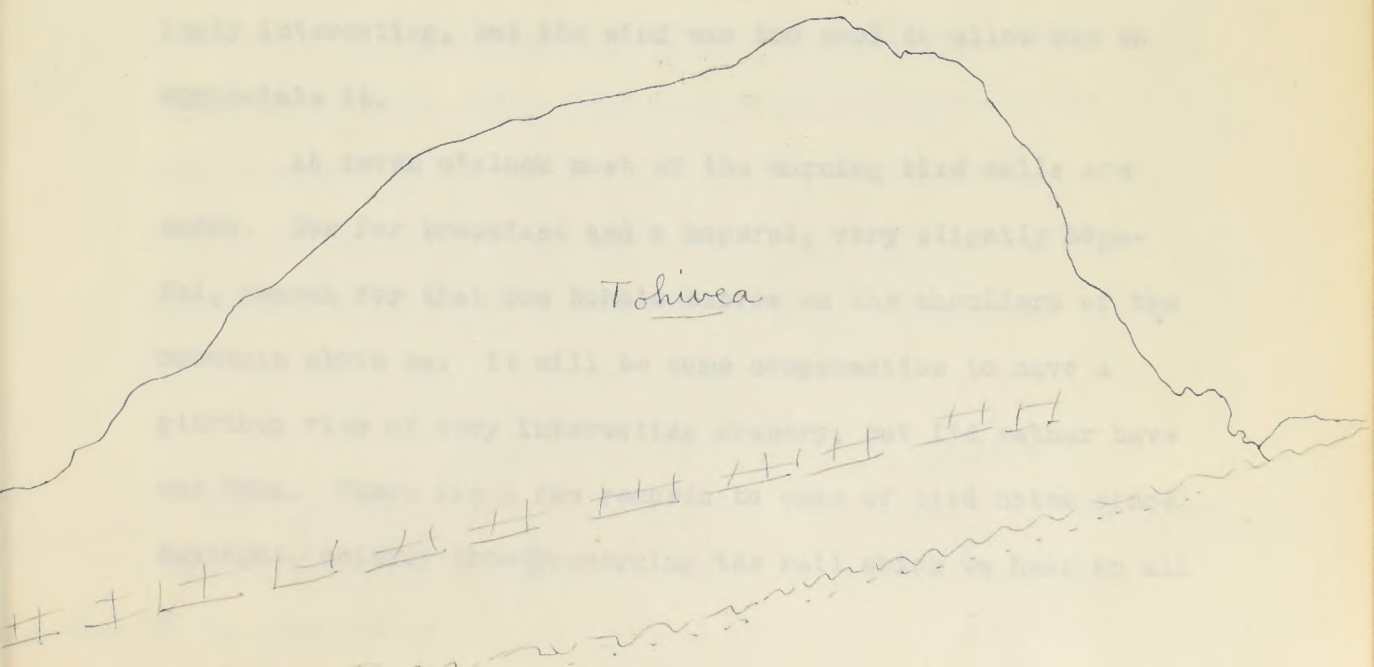
lar, pyramid shape, Tiura being decidedly so. Vaiumete and Matotea form a semi-circular amphitheatre at the head of the west creek of Opunohu.







There were a few Noha calls during the night which I did not record as to time nor extent. I was half asleep and quite benumbed with cold, and blankets were more tempting than scientific interest. A few more were heard some hours afterwards and I looked at the watch which recorded four o'clock. While the sun has been warming things up I've been here in my blankets writing and sketching. The frequent calls of the rail lead me to high hopes of finding them plentiful over in the fern brake on the opposite ridge.

June 24

These boys name the curlew "uea", recognizable by call and curved bill.

An extremely cold, uncomfortable night which made it frequently necessary to turn over and warm the chilled side against the warm earth; and turning was a ticklish job on my less than one yard of flat surface, only protected by shrubs all less than one inch in diameter. The moonlight was exceedingly interesting, but the wind was too cool to allow one to appreciate it.

At seven o'clock most of the morning bird calls are ended. Now for breakfast and a hopeful, very slightly hopeful, search for that one Noha's burrow on the shoulders of the mountain above us. It will be some compensation to have a glorious view of very interesting scenery, but I'd rather have one Noha. There are a few records to make of bird notes since daylight, chiefly those concerning the rail which we hear on all

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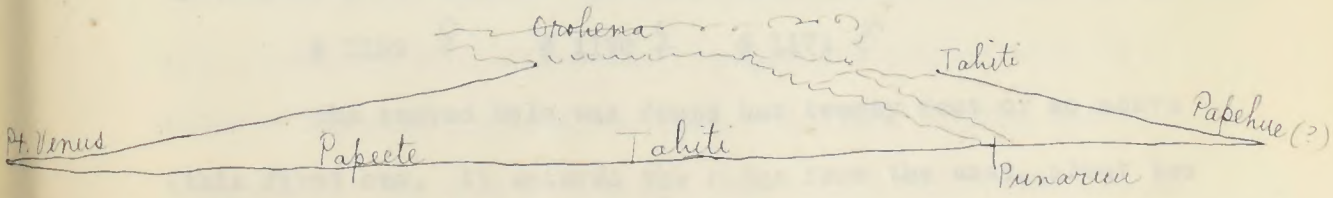
sides of us, piping and trilling. It is, however, absolutely useless and would be foolish to try to catch one here, our only chance being a broad stretch of Aihere such as I have noted on the ridge opposite, down which we will perhaps descend and attempt the fire encircling scheme. Three hawks were observed in the early dawn, but before them came the crowing of a jungle fowl in the head of the ravine to our left where we last passed water. Two of the hawks were observed playing about the spur beyond this ravine, where there is a small bluff, and where a hawk was twice observed yesterday. Once or twice I heard an unfamiliar note which somewhat resembled the Vaihiria "Stranger", and may have been the Rupi, or pigeon. One cuckoo and two or three kingfishers have chattered from the valley below.

The sun came up well to the northwards of Tahiti, of which island we have a slightly clearer view this morning. Orehena is buried in clouds, but Aurai and Tahiti are visible. If the slopes of Tahiti continued until they met at an apex, the island would be some four thousand feet higher. The following sketch will give a fair idea of the evenness of the sloping mountain foot-hills which lead up to the summits. No idea of the precipitous ruggedness of the interior valleys can be gained from external observation.



This is about the true proportional slope, as nearly as one eye and a sketch book can make it.

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The sun came up well to the northwards of Tahiti, of which island we have a slightly clearer view this morning. Orohena is buried in clouds, but Aorai and Tahiti are visible. If the slopes of Tahiti continued until they met at an apex, the island would be some four thousand feet higher. The following sketch will give a fair idea of the evenness of the sloping mountain foot-hills which lead up to the summits. No idea of the precipitous ruggedness of the interior valleys can be gained from external observation.

Ascending the ridge and hunting for Noha holes along either side of it, we have our first success at an elevation of 2250 feet. Here we found a hole showing signs of present habitation in the tracked appearance of the entrance, a very tiny, downy feather, and the unmistakable green and white oily sign of a fish-eating bird. The boys have set to work to dig it out. One can almost tell where to search diligently for burrows by the openness of the country. Where the brush is too thick for the birds to make a landing it is useless to search for their burrows. This hole is promising to be almost a record breaker for length. It runs alongside the ridge beneath the landing ground where the sign was found.

The boys shout "Manu!". Notebook and pen are scattered along the route betwixt my seat and them. I find a scratch on my hand where the first bird bit me. Yes! We found a pair building the large room at the end of the burrow, which is a little more than three meters long. The room they were building is already a foot square, or even a little larger. They seem to have encountered rocks all along the route of the burrow. The brush here is so low that one standing up can see over it. The boys go on up the ridge in search of more burrows, while I care for the specimens and wrap them up and write notes. The burrow was on the east side of the ridge which approaches Monaputa from the south. We have but two hundred feet to the summit.

1169 ♀ # 1170 ♀ # 1171 ♂

The second hole was found but twenty feet or so above this first one. It entered the ridge from the east, about two

Ascending the ridge and hunting for some holes along either side of it, we have our first success at an elevation of 1280 feet. Here we found a hole showing signs of previous habitation in the tracked appearance of the entrance, a very tiny, dowdy feather, and the unmistakable green and white oily sign of a fish-eating bird. The boys have set to work to dig it out. One can almost tell where to search diligently for burrows by the openness of the country. Where the brush is too thick for the birds to make a landing it is useless to search for their burrows. This hole is promising to be almost a record breaker for length. It runs alongside the ridge beneath the landing ground where the sign was found.

The boys shout "Kaan!". Notebook and pen are scattered along the route between my seat and them. I find a scratch on my hand where the first bird bit me. Yes! We found a pair building the large room at the end of the burrow, which is a little more than three meters long. The room they were building is already a foot square, or even a little larger. They seem to have accumulated rocks all along the route of the burrow. The brush here is so low that one standing up can see over it. The boys go on up the ridge in search of more burrows, while I care for the specimens and wrap them up and write notes. The burrow was on the east side of the ridge which approaches Zonnepute from the south. We have got two hundred feet to the summit.

♀ 1169 ♀ 1170 ♀ 1171 ♂

The second hole was found but twenty feet or so above this first one. It entered the ridge from the east, about two

feet down the side. It entered the soil forming the narrow ridge and proceeded up hill (I notice they always go uphill) about two meters, where the bird was located in the act of digging the hole. No room evident at the end.

Found no more holes between these and the summit of Monaputo, whither I urged the boys to go. The guide objected, but the other fellow went ahead and cut the trail.

My barometer registers an even 2600 feet. The boys are building a fire to make a smoke to attract attention. This view certainly confirms my decision that this island presents a drowned valley phemonena. The two long inland bays on the northward certainly are strong enough evidence to be convincing, while the bays of Afareaitu and Teavaro are also good evidence. That the whole island is the remnant of a former volcano I do not doubt. From here, the mountains to the south and westward present what was evidently the rim of a crater, now composing the valleys of Opunho and ? . The mountains between the two bays on the north are a link which connects the northwest and northeast ends of the present chain of peaks connected by knife ridges. The inner side of this crater presents a very precipitous wall.

As for this pierced mountain, Monaputa, the highest point is about twenty feet in diameter and quite flat, and covered by a low shrub. The hole penetrates a very narrow knife blade of rock connecting the opposite point, which is a meter or so wide but brush covered. The rock forming the bridge above the hole is perhaps less than a meter wide at its

feet down the side. It entered the soil forming the narrow ridge and proceeded up hill (I notice they always go uphill) about two meters, where the bird was located in the act of digging the hole. We took evidence at the end.

Found no more holes between these and the summit of Tamaputo, without I urged the boys to go. The guide objected, but the other fellow went down and out the trail.

My barometer registers an even 2600 feet. The boys are building a fire to make a smoke to attract attention. This view certainly confirms my decision that this island presents a drowned valley phenomena. The two long inland bays on the northward certainly are strong enough evidence to be convincing, while the bays of Garasetu and Tasaro are also good evidence. That the whole island is the remnant of a former volcano I do not doubt. From here, the mountains to the south and westward present what was evidently the rim of a crater, now composing the valleys of Opunohu and . The mountains between the two bays on the north are a line which connects the northwest and northeast ends of the present chain of peaks connected by knife ridges. The inner side of this crater presents a very precipitous wall.

As for this pierced mountain, Moangora, the highest point is about twenty feet in diameter and quite flat, and covered by a low shrub. The hole penetrates a very narrow knife blade of rock connecting the opposite point, which is a meter or so wide but brush covered. The rock forming the bridge above the hole is perhaps less than a meter wide at its

widest. There is a slight flaw in the old legend, which the missionaries thought too ridiculous to record in its original, poetical form, along with many others the natives had. I wish those same missionaries did still exist somewhere in a conscious state and could realize how ridiculous their own work now sounds to us. The legend is about the great God, ? , throwing his spear from Orohena and piercing this mountain. The point of Tahiti at about Papehue is about in the proper line, but Orohena is considerably out of a direct line with the hole.

Our fire was unsuccessful, but we made all the noise we could with gun, whistle and larynx, and at least one person heard us,--someone up the Teavaro valley after fei. We lunched upon corned-beef and bread, with plenty of lemon juice, and had two oranges divided in Irish style, one for those two and one for me too. We are now below the upper "Apo", where I offered the free-lance boy five francs if he found an egg, but he is certain there is not even a lining in the nest.

Just below I spotted a feather at a place where birds could land and take away. The hole below does not reveal recent usage, and the men have found nothing in the hole as far as it goes, only a meter or so to one side. This hole was on the shady west side of the ridge, entering below a tree root. A thorough search in the vicinity of the two successful holes revealed but two more old holes uninhabited.

So at three-thirty we proceeded down to our outfit, packed it up, and moved down to oranges and water and fei for the night. We were quite thirsty after twenty-seven hours

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Our fire was unsuccessful, but we made all the noise we could with gun, whistle and lungs, and at least one person heard us,--someone up the Tavaro valley after 7o'. We launched upon corned-beef and bread, with plenty of lemon juice, and had two oranges divided in Irish style, one for those two and one for me too. We are now below the upper "Apo", where I offered the free-lance boy five francs if he found an egg, but he is certain there is not even a liking in the nest.

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So at three-thirty we proceeded down to our outfit, packed it up, and moved down to oranges and water and 7o' for the night. We were quite thirsty after twenty-seven hours

without water. Noha is calling overhead. My limit of oranges was one welcome one found up the trail where it had slipped out of the boy's pockets yesterday, and six at the trees first reached. Later a good big drink of water was also enjoyable. Getting down off the shoulder on which we spent a cold night was no easy job and would have been impossible except for the "ieie", climbing pandanus, which is a curse when tangled where walking would otherwise be pleasant, but is a quite welcome hand-hold and even rope when climbing, or especially when descending overly steep hillsides. This is a splendid, open ridge or slope where shearwaters could find good landing places and a splendid clay soil to dig in, but half a day's hunting by the two boys revealed nothing. Well, three birds were quite a surprise, so why want more? The single bird was a female with one or two eggs swelling up. The female of the pair had several eggs swelling, while the male was decidedly past breeding, both testes being shrunken and one dark. This makes their breeding season quite an extensive one, the bird taken in Tahiti in March being an early breeder. Three months are already gone since then.

For dinner tonight the free-lance boy, who came along just to see what he could earn at five francs a bird, and I ate the bodies of the Noha roasted over the fire. We had fei and tea besides, and I rationed out two biscuits and half a can of jam.

Heard the Rupi call only once this evening. Rail were calling all afternoon from shaded ravines and fern brakes. If

without water. Noon is calling overhead. My limit of oranges was one welcome one found up the trail where it had slipped out of the boy's pockets yesterday, and six at the trees first reached. Later a good big drink of water was also enjoyable. Getting down off the shoulder on which we spent a cold night was no easy job and would have been impossible except for the "rule", climbing paradoxes, which is a curse when tangled where walking would otherwise be learned, but is a quite welcome hand-hold and even rope when climbing, or especially when descending overly steep hillsides. Rule is a splendid, open ridge or slope where observers could find good landing places and a splendid play ball to dig in, but half a day's tramping by the two boys revealed nothing. Well, three birds were quite a surprise, so why want more? The single bird was a female with one or two eggs swelling up. The female of the pair had several eggs swelling, while the male was decidedly past breeding, both testes being shrunken and one dark. This makes their breeding season quite an extensive one, the bird taken in March in March being an early breeder. Three months are already gone since then.

For dinner tonight the free-lance boy, who came along just to see what he could earn at five francs a bird, and I ate the bodies of the hawk roasted over the fire. We had fed and the boatman, and I retained out two biscuits and half a can of jam.

Heard the hogi call only once this evening. Hail were calling all afternoon from wooded ravines and from forest. It

we just could get three of them tomorrow! At about six-thirty a bird passed over us uttering a most indescribable call. It had the suggestion of a shearwater in time and a dual note, but it was more of a screech than any shearwater call I've heard. The two-note call was uttered three times in close succession. At eight o'clock, one two-note call similar to it was heard. Can it be the small, white-bellied shearwater, of which these natives know nothing?

I skinned out the birds, but left the fat on to keep the skins moist until we get back of Afareaitu tomorrow,--early if we find no favorable burning place, but late if we do.

June 25

Called a dove and shot her from bed soon after daylight. Kingfishers were calling, and I obtained one soon after leaving camp. During the early dawn I called incessantly for Rupi without an answer. After sewing up our overalls, we had breakfast on fei, salmon, tea and bread, with two biscuits and a little jam. Got under way about eight o'clock proceeding down the valley a few hundred meters, then leaving the "purunuu taata" there and taking an angle up the canyon side towards the fern brakes which I intend burning for Meho. This hillside, like most of them above five hundred feet, is a dense tangle of the climbing pandanus, "ieie", tree ferns, stump ferns, and vine ferns, with here and there a tree of the higher order forming a support for the climbing plants in their effort to attain as much sunlight as possible. What a food factory the tropical jungle is, and

we just could get three of them tomorrow! At about six-thirty a bird passed over us uttering a most indescribable call. It had the suggestion of a shearwater in time and a duel note, but it was more of a screech than any shearwater call I've heard. The two-note call was uttered three times in close succession. At eight o'clock, one two-note call similar to it was heard. Can it be the small, white-bellied shearwater, of which these natives know nothing?

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June 25

Called a dore and shot her from bed soon after daylight. Kingfishers were calling, and I obtained one soon after leaving camp. During the early dawn I called incessantly for Lapi without an answer. After cooking up our overalls, we had breakfast on fel, salmon, tea and bread, with two biscuits and a little jam. Got under way about eight o'clock proceeding down the valley a few hundred meters, then leaving the "purumun tasks" there and taking an angle up the canyon side towards the fore brake which I intend burning for Kano. This hillside, like most of them above five hundred feet, is a dense tangle of the climbing pandanus, "iele", tree ferns, stag ferns, and vine ferns, with here and there a tree of the higher order forming a support for the climbing plants in their effort to attain as much sunlight as possible. What a food factory the tropical jungle is, and

what a little amount and less variety of dependent animal life is here to feed upon it! Flys, wasps, bees, ants, a few moths and butterflies, a few dragon-flies, sow-bugs, centipedes, spiders, crabs, scorpions, snails, rats, mice, men and pigs; doves, kingfishers, chickens, warblers, rail, hawks; worms, scale insects and bacteria and other microscopic organisms,-- and you have about the full ecology of one of these islands above high tide level. Their isolation has prevented any great number of animals, insects or plants from reaching them, and many that arrived no doubt failed to survive, while others flourished overabundantly.

We have finally struck a pig trail which means a little less brush cutting, as long as it leads in our direction. But pigs are less considerate of ups and downs than Polynesians. They simply go where there is the least brush, and ofttimes that is straight up and then straight down. We will soon gain a ridge, however, when better traveling should result. But, as I remember, we have at least one rather deep ravine to cross before we reach the uppermost fern brake. A beautiful, sunshiny day with butterflies about more abundantly than I have heretofore seen them. Here, at ten o'clock, altitude 1550 feet, we are indulging in our first of five oranges each. Climbing is quite hot, as the sun's rays hit this slope almost at a right angle.

The most characteristic feature of these islands is that which is probably least mentioned, the ever thunderous roar of the surf upon the barrier reefs. It can be heard above all other sounds, even the school children repeating their lesson

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The most characteristic feature of these islands is that which is probably least mentioned, the ever thunderous roar of the surf upon the barrier reefs. It can be heard above all other sounds, even the school children repeating their lessons

orally en masse next door to our hotel. Up here on the mountains it is especially impressive as one looks down upon the emerald shallows of the lagoon, and the turquoise channels and deeper cobalt blue ocean beyond, with that snow-white border of seething foam along the reef.

Having attained the ridge at 1650 feet, we find that we have no less than four ravines between us and the desired fern brake. It will be high noon ere we arrive there, but at that hour the ferns should burn well. These ravine heads are more given to ferns than to the "ieie" and should not be much worse traveling. The guide is surely earning his money today, every meter of our way having been tenaciously contested for by the opposing hordes of jungle brush. The fourth ravine has a welcome trickle of water in its clayey channel. On the next ridge we are breathing. The fern brakes are "ieie" thickets, and at that are across a very deep ravine which might well be termed a small valley. We will descend into it and eat lunch; then decide about ascending the opposite ridge, which does not look at all promising from this nearer view. The field glasses would have saved a bit of climbing, but I foolishly left them in Papeete. Heard a rail call from somewhere in ravine below at this midday, with a sun shining hot.

The valley was 250 feet deep. Chickens have been scratching where we lunched. Splendid brush for birds but not a sound of anything, and no answers to various calls. Purau, ferns of various sorts, and the inevitable "ieie" make up the

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Having attained the ridge at 1800 feet, we find that we have no less than four ravines between us and the desired fern brake. It will be high noon ere we arrive there, but at that hour the ferns should burn well. Those ravine heads are more given to ferns than to the "lele" and should not be much worse travelling. The guide is surely earning his money today, every meter of our way having been tenaciously contested for by the opposing hordes of jungle brush. The fourth ravine has a welcome trickle of water in its clayey channel. On the next ridge we are breathing. The fern brakes are "lele" tuloxota, and at that are across a very deep ravine which might well be termed a small valley. We will descend into it and set lunch, then decide about ascending the opposite ridge, which does not look at all promising from this nearer view. The field glasses would have saved a bit of climbing, but I foolishly left them in Papeete. Heard a rail call from somewhere in ravine below at this midday, with a sun shining hot.

The valley was 200 feet deep. Unknown have been scratching where we landed. Splendid brush for birds but not a sound of anything, and no answers to various calls. Guava, ferns of various sorts, and the inevitable "lele" make up the

brush. The boys say we'll be home in two hours and a half. Kingfishers delayed us several times. We got one, but were unable to see the others. We have just stopped at some coconuts for refreshments, but not with the effort required for a fresh drink. These boys have taught me one more tropical lesson. They found two sprouting nuts, cut them green, and in the space occupied by the water was a pithy core which was very cool, moist and refreshing, giving one the idea it was a cold watermelon, not quite so juicy and with a nourishing taste behind it. Mosquitoes are very thick, no doubt hatched from rain water collected in the many halved coconuts about here. Elevation 950 feet, which is as high as coconuts grow in the Marquesas, but these are very inferior. The boys cut down a young breadfruit tree for six fruit. An uneventful journey down to 150 feet, where we find a bunch of ripe bananas and flush a hen.

The boys stopped at the Chinaman's for tobacco, having been without it for a night and day proving too much for the habit, which is one reason I say I'm too lazy to smoke. Mr. Beck was out hunting. I thought of washing the birds but Mrs. Beck suggested rubbing off the dry mud and dust as much as possible. It was sufficient. She skinned and cleaned the two kingfishers. Mr. Beck returned shortly before dinner. It took but a short time for him to make up the five birds after dinner. The natives are especially fond of the breast feathers (white ones only) of the Noha for making fish-hooks. So I made the two boys a present of a dozen each, taken from various parts of the birds' bodies. This is, no doubt, the reason that there is generally

brush. The boys may well be gone in two hours and a half.

Kingfishers delayed us several times. We got one, but were unable to see the others. We have just stopped at some cocoanuts for refreshments, but not with the effort required for a fresh drink. These boys have taught me one more tropical lesson. They found two sprouting nuts, not them green, and in the space occupied by the water was a pulpy core which was very cool, moist and refreshing, giving one the idea it was a cold watermelon, not quite so juicy and with a nourishing taste behind it. Mosquitoes are very thick, no doubt hatched from rain water collected in the many halved cocoanuts about here. Elevation 950 feet, which is as high as cocoanuts grow in the Marquesas, but these are very inferior. The boys cut down a young breadfruit tree for six fruit. An uneventful journey down to 150 feet, where we find a bunch of ripe bananas and flush a hen.

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someone who knows where the birds nest. They also use the breast feathers of Petia, the yellow-billed tropic-bird, for that purpose. The barometer recorded seventy-five feet above sea level here. It was but thirty-three feet higher than the mapped altitude of Monaputa, not a serious difference when it reads by fifty feet.

June 26

Spent the day reading.

June 27

This morning we packed our junk (there's a mass of it too), ready for transportation to Temae, near the lake where Mr. Beck by a good long hike yesterday secured lodgings for us. At 9:15 I struck out in my rain coat and covered the road trip during a continual shower, which dampened my jacket through the rain coat. Obtained one of six yellow-billed terns seen. Shot at three of them. Saw three reef-herons and one tatler along the way, and mynas in abundance. Beyond the bay of Teavaro I turned into a cirque below a mass of cliffs. The rain has ceased, and broken clouds promise fair weather. Mosquitoes are frightfully bothersome. Kingfisher calling but independent. One or two doves are calling.

Climbed to five hundred feet where lantana thickets were encountered. While eating lunch I saw a bird, which I believe was a cuckoo, in tree tops across a ravine. Took a long chance but fear I missed him, leaves and the ravine hiding

someone who knows where the birds nest. They also use the orange feathers of Tatia, the yellow-billed tropic-bird, for that purpose. The barometer recorded seventy-five feet above sea level here. It was but thirty-three feet higher than the mapped altitude of Tonquin, but a serious difference when it reads by fifty feet.

June 20

Spent the day resting.

June 27

This morning we packed our junk (there's a mass of it too), ready for transportation to Tacna, near the lake where Mr. Sack by a good long hike yesterday secured lodgings for us. At 9:15 I struck out in my rain coat and covered the road trip during a continual shower, which dampened my jacket through the rain coat. Obtained one of six yellow-billed terns seen. Shot at three of them. Saw three reef-herons and one tattler along the way, and egrets in abundance. Beyond the bay of Tacario I turned into a cirque below a mass of cliffs. The rain was ceased, and broken clouds promise fair weather. Bonaparte's are frightfully boisterous. Kingfisher calling but independent. One or two doves are calling.

Climbed to five hundred feet where Lanians thicketts were encountered. While eating lunch I saw a bird, which I believe was a cuanco, in tree tops across a ravine. Took a long chance but fear I missed him. Leaves and the ravine hiding

his departure after a jump and flutter from the limb he was perched upon. I kept a direct line on the spot where a dead bird would have fallen. The ground was clear but leaf strewn, and no sign of the bird. Seated upon a rock which gave a commanding view of the surrounding space, I watched for any signs or movements of a wounded bird while finishing my lunch. Several tropic-birds are calling overhead, but I cannot see how many, nor reach anything like an advantageous place for calling them. The thicket here is mostly hibiscus, with lantana encroaching from the rocks above, and occasional maupi groves which form tempting strolls as compared with the scrambling and climbing through the low-lying limbs of the other bush. Mosquitoes are very bothersome since rain stopped. Roosters crowed a bit to welcome fair weather.

Otaha--frigate bird.

Oau--booby.

Having no success in the rain, for the sunshine did not last long, between three and four I dropped down and proceeded along the road till opposite the lake. Wandered out through marshy patches near timber, but saw nor heard no bird life except myna. Found where canoes were dragged across considerable mud to the lake, two canoes being at the edge of the tule. I waded out a ways but found myself in to my knees in muck, so after listening ten or fifteen minutes for rail, I pulled out. I reached the road just ahead of the boy with our equipment, so was at the house to see to unloading it, and to take care of rain-silk which had been spread over the whole and was a bit

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Having no success in the rain, for the sunshine did not last long, between three and four I dropped down and proceeded along the road till opposite the lake. Wandered out through marshy patches near timber, but saw nor heard no bird life except ducks. Found where canoes were dragged across considerable road to the lake, two canoes being at the edge of the tide. I waded out a ways but found myself in to my knees in muck, so after listening ten or fifteen minutes for rail, I pulled out. I reached the road just ahead of the boy with our equipment, so was at the house to see to unloading it, and to take care of rain-silk which had been spread over the whole and was a bit

muddy.

Mr. Beck returned after a very heavy shower with one duck, the same as the one we got at Austral Islands and Rapa. He heard nothing of the rail. His man informed him that it could be obtained at Vaihiria. Well, I'll give an additional twenty francs for all he gets there.

Accommodations at our new lodging are about the same as before. The meals are put up in better form, and we had real Campbell's soup, which I could smell before I sat down. Sweet cakes with tea. Some natives are holding a sangerfest not very far distant, and, as they have no harmony, I wish they were on the other side of the island. One man and one woman, in particular, need never be instructed to open their mouths wide. Mosquitoes galore!

June 28

Breakfast at seven. The coconut milk looked as if it had been squeezed through rather dirty fingers. I came into valley behind house. Picked up one kingfisher in breadfruit trees where more were heard. Later, obtained one from a tall acacia tree amidst hibiscus. Myna birds very thick, and a few doves calling. I can never refrain from answering them. Ascended trail to a garden of breadfruit, bananas and papaya where it ended. Large flock of mynas there. Ascended to bamboo thicket below prominent abutment of cliff. Heard nothing of warblers. Obtained a kingfisher in hibiscus woods with auxiliary. A pair of them perched upon a limb watching for insects.

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It soon returned after a very heavy shower with one dwar, the same as the one we got at Anatral Islands and Tape. We heard nothing of the mail. The man informed him that it would be obtained at Vaihiria. Well, I'll give an additional twenty francs for all he gets there.

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Breakfast at seven. The coconut milk looked as if it had been squeezed through rather dirty fingers. I came into valley behind house. Picked up one kingfisher in breadfruit trees where more were heard. Later, obtained one from a tall acacia tree amidst hibiscus. Syrne birds very thick, and a few dove calling. I can never refrain from answering them. Ascended trail to a garden of breadfruit, bananas and papaya where it ended. Large floor of grass there. Ascended to bamboo thicket below prominent abutment of cliff. Heard nothing of warblers. Obtained a kingfisher in hibiscus woods with auxiliary. A pair of them perched upon a limb watching for insects.

Crossed over to west side of the valley. Continually calling for warblers, I was finally rewarded by a cuckoo answering me. By sitting down and patiently watching several minutes I at last espied him. His checkered feathers make a marvelous camouflage in the darkness of the jungle below the leaves. Movement, alone, gives them away. Ever since leaving the fruit garden the lantana has been more or less objectionable to my progress. Have carried tipi in my hand most of the time. Ascended steep slope to a large bamboo thicket at 750 feet elevation. I spent an hour in it, but heard nothing save a rat and kingfisher, at neither of which could I get a shot.

Climbed on up the ridge and went up some cliffs by the aid of small shrubs and lantana vines, down which I do not want to have to go. But here at 1100 feet the trail is discernable. A hawk came overhead, high up, scolded me a dozen times, and returned to his mist-enshrouded realm above. Another approached from below but decided to cross over to the battlements of lava on the opposite ridge. Kingfisher's calls are heard above the mynas from the vale below. Roosters are crowing high up on the hillside. How innocently dark green lantana patches appear from a distance. Trees with light colored trunks loom up in brilliant contrast all over the lantana-enshrouded slopes above the cliffs that head the valley. Then the valley is a blue-green with dominant hibiscus, and here and there a patch of yellow-green bamboo or coconuts. The foothills are a light, grass green with splotches of white dead grass and seed plumes. A black ledge of lava protrudes here and there at irregular intervals. A few white houses

Crossed over to west side of the valley. Continually calling for warblers, I was finally rewarded by a cuckoo answering me. By sitting down and patiently watching several minutes I at last sighted him. His checkered feathers make a marvelous camouflage in the darkness of the jungle below the leaves. Movement, alone, gives them away. Ever since leaving the first garden the lantana has been more or less objectionable to my progress. Have carried tipi in my hand most of the time. Ascended steep slope to a large bamboo thicket at 700 feet elevation. I spent an hour in it, but heard nothing save a rat and kingfisher, at neither of which could I get a shot.

Climbed on up the ridge and went up some niffle by the aid of small shrubs and lantana vines, down which I do not want to have to go. But here at 1100 feet the trail is discernable. A hawk came overhead, high up, scolded me a dozen times, and returned to his mist-enshrouded realm above. Another approached from below but decided to cross over to the battlements of lava on the opposite ridge. Kingfisher's calls are heard above the murmur from the vale below. Roosters are crowing high up on the Hillside. How innocently dark green lantana patches appear from a distance. Trees with light colored trunks loom up in brilliant contrast all over the lantana-enshrouded slopes above the niffle that head the valley. Then the valley is a blue-green with occasional hibiscus, and here and there a patch of yellow-green bamboo or cocoanuts. The foothills are a light, green grass with splotches of white dead grass and good pinnae. A black ledge or lava protrudes here and there at irregular intervals. A few white houses

with metal roofs stand out from the scattered grove of trees above the village. Straggling coconut palms, two beds of taro, the lake, the reed-green marsh, the wood beyond with attempts at coconut planting, the narrow lagoon, the foaming reef, the rippled ocean, a haze and distant Tahiti,--a beautiful scene to which this brief resting spell before descending cannot do justice.

June 29

We are off this morning for Noha up the ridge where I was yesterday, Mr. Beck going along to return today. One man and I are to spend the night. Another native we offered five francs for what birds he found, but he is holding out this morning for seven francs, which we feel too exorbitant, especially since the other fellow will probably find all the birds. Left at 7:15.

Mr. Beck got the wrong trail at clearing, but we halloed him back. Before we had gone far along open guavo brush road, we saw a tropic-bird dive into a cliff beside an ironwood tree. I went over but was unable to locate the nest. Our guide came and finally found the nest, the bird, and an egg. The nest was an unlined hole in rocks in face of twelve foot cliff above brush ledge, below which was a twenty foot ledge. This bird is "Mauroa", "Patea" being the red-tailed which is elsewhere called "Tavai".

Ascended on up ridge to second ironwood tree, where we overtook Mr. Beck shooting goats. He killed a billy, and we skinned out the hind quarters with much difficulty by the use of our none too sharp tipi. No one had a pocket knife. Having wrapped up the meat in valuable paper and buried it with leaves, we continued our

with metal roofs stand out from the scattered groves of trees above the village. Straggling coconut palms, two beds of taro, the lagoon, the reed-green marsh, the wood beyond with attempts at coconut planting, the narrow lagoon, the foaming reef, the tripled ocean, a hazy and distant Tahiti,--a beautiful scene to which this brief resting spell before dozending cannot do justice.

June 29

We are off this morning for Soba up the ridge where I was yesterday, Mr. Beck going along to return today. One man and I are to spend the night. Another native we offered five francs for what birds he found, but he is holding out this morning for seven francs, which we feel too mercenary, especially since the other fellow will probably find all the birds. Left at 7:15.

Mr. Beck got the wrong trail at climbing, but we halloed him back. Before we had gone far along open grassy stream road, we saw a tropic-bird dive into a cliff beside an ironwood tree. I went over but was unable to locate the nest. Our guide came and finally found the nest, the bird, and an egg. The nest was an unlined hole in rocks in face of twelve foot cliff above stream ledge, below which was a twenty foot ledge. This bird is "Kaurora", "Matea" being the red-tailed which is elsewhere called "Tavai".

Ascended on up ridge to second ironwood tree, where we overtook Mr. Beck collecting plants. He killed a bird, and we climbed out the blind quarters with much difficulty by the aid of our guns too sharp tipl. No one had a pocket knife. Having wrapped up the most in valuable paper and buried it with leaves, we continued our

course. Mr. Beck ahead took side trail leading in the direction of a crowing rooster. He approached within ten feet, so he says, but could not get a shot at them. The hens flew away cackling. Pairs of hawks and several singles seen frequently. The trail follows a ridge a ways and then drops around on the side slope. The second ironwood tree was at 1500 feet, and oranges grow on south slope shortly beyond,--delicious little fellows, half a dozen of them being about enough to satisfy a very thirsty man. Oranges all along the rest of the trail. At 1900 feet we stopped to lunch, Mr. Beck returning down trail to hunt warblers. The guide is inquiring how much I'll give him to show me some "Meho". "Twenty francs", say I, for each one I get a shot at from his efforts and kill, of course. Hawks about the ridge above, and I have hopes of getting one.

We approached a fei bed and the guide told me there were chickens ahead of us. He located a brood of chicks about the size of the one obtained at Vaianahe. I saw three of them, but instead of putting in the auxiliary and shooting them, I attempted to run down into the ravine and pick them up. My rush flushed the hen from above on the opposite side. I had but a fleeting glimpse of her, and my footing was not secure enough to allow stopping and shooting. She was lighter colored than any hen I have yet seen, showing a great deal of white as she flew. The youngsters, by the time I reached their former location, had dispersed and hidden as completely as ever I saw grouse chicks secure themselves from view. The hen's cackling warning, no doubt, was their one to remain hidden. Once when she paused, one at a distance from me

course. Mr. Beck moved down side trail leading in the direction of a growing rooster. We approached within ten feet, we do says, but could not get a shot at them. The cocks flew away cackling. Tails of hawks and several eagles seen frequently. The trail follows a ridge a ways and then drops around on the side slope. The second ironwood tree was at 1800 feet, and oranges grow on south slope shortly beyond,--delicious little fellows, half a dozen of them being about enough to satisfy a very thirsty man. Oranges all along the rest of the trail. At 1900 feet we stopped to lunch, Mr. Beck returning down trail to hunt waterfowl. The guide is inquiring how much I'll give him to show me some "Kaka". "Twenty francs", say I, for each one I get a shot at from his efforts and skill, of course. Hawks about the ridge above, and I have hopes of getting one.

We approached a fat hen and the guide told me there were chickens ahead of us. He located a brood of chicks about the size of the one obtained at Vaianuma. I saw three of them, but instead of putting in the auxiliary and shooting them, I attempted to run down into the ravine and pick them up. My rush flushed the hen from above on the opposite side. I had but a fleeting glimpse of her, and my footing was not secure enough to allow stopping and shooting. She was lighter colored than any hen I have yet seen, showing a great deal of white as she flew. The youngsters, by the time I reached their former location, had disperses and hidden as completely as ever I saw grouse chicks secure themselves from view. The hen's cackling warning, no doubt, was their only cue to remain hidden. Once when she paused, one at a distance from me

peeped a few times, but a renewed burst of cackles quieted him. We were unable by clucking to get them to peep or come into sight. The old hen's cackling started a rooster above the fei, but he quieted down before we could locate him.

The trail after finding its way around a dense clump of Opuhi reeds proceeded up the ravine to the summit of the ridge, a short trail through the "ieie" finishing the journey. The first rail call is heard at two-thirty. We came along the ridge to the place where the guide says we camp. We went down the shoulder where he thought it most likely we should find Noha burrows. Several old ones were found (3--5), one of which had a nest worthy of description. It was at the end of a burrow a little more than two meters long, and which crossed from one side to the other. The burrow was perhaps fifteen or twenty centimeters in diameter. One could easily distinguish the marks of the curved bill upon the hard resistant clay soil. The room was thirty or fifty centimeters in diameter, not exactly circular, and perhaps twenty centimeters or a little more deep. The bottom dropped five centimeters below the bottom of the runway. This was lined with quite a quantity of dry fern leaves, "ieie" leaves, and coarse fern stalks. There were many feathers in the nest, but all last year ones.

Two really fresh holes were found, with abundant signs and feathers on probably landing places nearby. One had crossed the ridge from the entrance and an attempt had been made to make a room, but apparently the soil was all removed from one side, exposing it to dampness at least, and probable dripping from

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the moss bank above. Finding their efforts thus frustrated, the birds had returned to the center of the ridge and entered it at right angles to their runway, going up hill about one meter and there making a room which contained a few sticks and three fresh feathers. We recovered the place where we mined into the runway, and hope to find birds in it when the moon comes up in the morning.

Seeing diggings where the guide and his pardner had obtained a bird about two weeks ago, I went over to look it over. The entrance had been at some clumps of moss which afforded a good landing. It had followed alongside the hill face, and finally had turned directly into the hill, where they had excavated a large hole. There was no sign of a room. Looking at it closely, for I had seen sign above their diggings which had aroused my suspicions, I observed a hole leading off at right angles to their excavation. Reaching into it, I heard a noise like a bird inside. It did not take me long to sink another tunnel that would tap the new burrow, and soon I had my bird. Found him still digging a runway which he had made about one meter long from the excavation, rather slower digging than the Pirae bird did, but there may have been two there. Twice now have I found birds paying no attention to the utter destruction of their burrows, but setting right to work to build new ones, or even to continue the destroyed one farther into the hill, which shows that they have little fear of mankind. At our observation point, it appears the native does not intend to search for more burrows today. But yes! he says we're off along another

the moss back above. Finding their efforts thus frustrated, the birds had returned to the center of the ridge and entered it at right angles to their runway, going up hill about one meter and there making a room which contained a few sticks and three fresh feathers. We recovered the place where we mined into the runway, and hope to find birds in it when the moon comes up in the morning.

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ridge now. (Collection # 1186 ♀)

Elevation 2350 feet, typical Noha altitude. We failed to find more than one bit of sign and no "Apo Noha" near it. Landing and taking off places not very good along this ridge. The guide went down to orange trees and brought two full bags back to camp. My day's feed on them has reached fifteen, but they are rather small. Rooster crowing down in the valleys. Meho trilled not twenty meters from where we sat eating. Between three and four o'clock the call of the unknown "Stranger" came to me from fei grove in bottom of valley, and after supper another called from valley below us. Very likely they are the "Rupi", but why does not one see them flying about a little, or ever come across one? No doubt they are scarce and the very fact that they live upon fei is evidence that they dwell high up. Hawks around peak where we head tomorrow.

June 30

1:30 A. M. Noha awakes us. They called last evening from 6:45 until 7:30. Not many birds and not many calls, nor any very near at hand. But this morning one called from below us down the ridge where we found the holes and bird yesterday. The guide has gone down there in the dark. These natives have some courage, it is certain. Of course, with bare feet they can sort of feel their way along, but to descend a moss-banked ridge, with small drop-offs on either side at various places, even in daylight is somewhat risky.

One bird, at least, has been flying about calling since

ridge now. (Collection #1136 ♀)

Elevation 2300 feet, typical zone altitude. We failed to find more than one bit of sign and no "Ajo Bobs" near it. Landing and taking off places not very good along this ridge. The guide went down to orange trees and brought two full bags back to camp. My day's food on them has reached fifteen, but they are rather small. Moister growing down in the valleys. Some trilled not twenty motors from where we set sailing. Between three and four o'clock the call of the unknown "Stranger" came to me from fel grove in bottom of valley, and after supper another called from valley below us. Very likely they are the "Virgin", but why does not one see them flying about a little, or ever come across one? No doubt they are scarce and the very fact that they live upon fel is evidence that they dwell high up. Leaves around peak where we head tomorrow.

June 30

1:30 A. M. Bobs awaken us. They called last evening from 6:45 until 7:30. Not many birds and not many calls, nor any very near at hand. But this morning one called from below us down the ridge where we found the holes and bird yesterday. The guide has gone down there in the dark. Those mulives are some contrary, it is certain. Of course, with bare feet they can sort of feel their way along, but to descend a sure-enough ridge, with small drop-offs on either side at various places, even in daylight is somewhat risky.

One bird, at least, has been flying about calling since

we awoke ten minutes ago. Now the calls grow faint and distant; then they increase in volume until quite loud and distinct, evidently as the bird circles back down. But lo! from down our ridge comes a long answering scream. The native should be down about there. May that last call guide him to a bird! The other is now very distant and barely audible.

It has clouded over and a certain amount of mist is falling, sounding now like rain. I fear we're in for a little storm. The near bird has taken wing and calls about below us. The native returns with a long tale about it. All that I can make out is that the bird was very close to him when it called. I think he scared it off some landing moss from what he says.

The calling lasted perhaps an hour this morning. As I surmised, it rained in a drizzling manner for some time, getting the blankets quite wet about my feet where the rain seemed to have drained into a hole. The native curled up amongst his legs and kept high and dry. I tried it for a while, but finally stretched out, disregarding a bit of moisture about my feet. We slept in an hour while the sun came out to warm things up a bit. Meho calls from the dense growth on the side of the hill. Oh, for some method of catching him!

From here one gets another viewpoint of the various mountains which make the interesting scenery of this island. Monaputa presents its edge to us. It is indeed a precipitous affair on this side.

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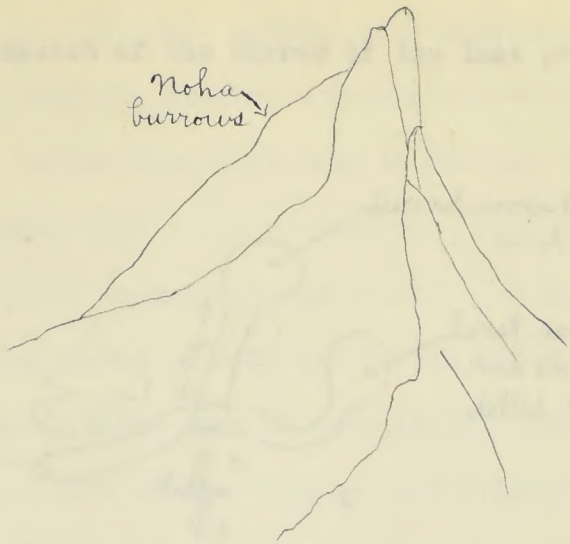
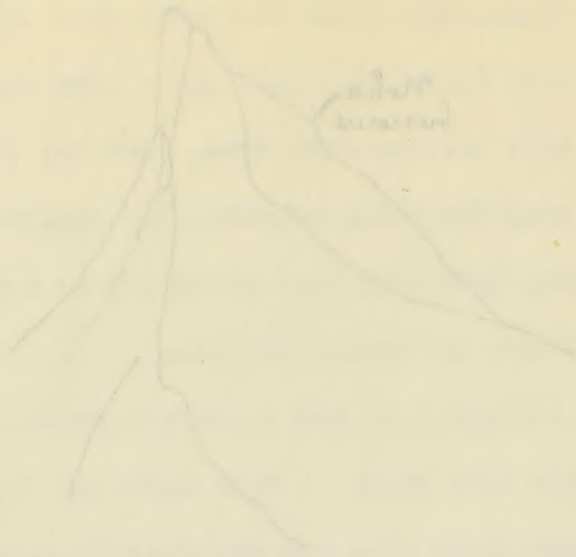
From here one gets another viewpoint of the various mountains which make the interesting scenery of this island. Sonapete presents its edge to us. It is indeed a precipitous affair on this side.



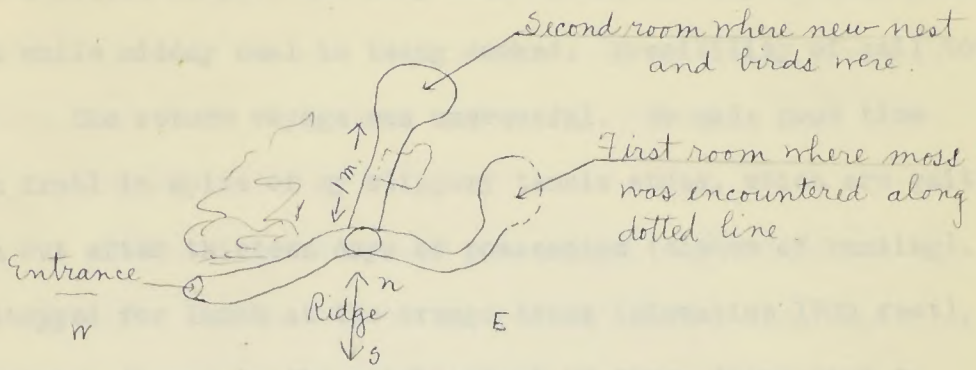
The next mountain west of us shows a decidedly thin knife ridge running from this hill to it. The large crater is more than ever evident from here. This northern edge, however, is rather straight across. The next hill west lines up directly with this and the one between the two bays, which, in turn, hides the hill at the end of the island from view. Not hearing any birds along the ridge north of us last night, we will spend the morning below to the west where we did hear them.

The guide has crossed over to two small knolls along ridge leading toward hill between here and Monaputa. I went down to the newly made nest we had broken into yesterday and found a pair of birds there,--a welcome surprise. When I opened the hole they screamed at me a bit. In spite of precautions to cover my hand with a handkerchief, I have a long cut on it from the beak of the first bird captured. They do not seem to have worked any upon the nest, which needed considerable more lining. If we get three birds on every mountain we will be quite satisfied, so much better in contrast to our Tahiti excursions.

1187 ♀ # 1188 ♂



A rough plan sketch of the burrow of the last pair of birds found follows.



The ridge is a clayey, heavy soil, being recently decomposed lava which was not encountered except in a few small seams in the excavation of the first bird's burrow, where a tunnel entered the hillside nearly two meters. Above the clay is a bed of moss, one to three feet in thickness; this is very damp at present. A small, broad frond fern grows on the moss with a low, green-leaved, hard-wooded shrub. Occasional "ieie", climbing pandanus, winds up from the slope below where it abounds. This shoulder is slightly to the west of due south from the summit of the hill. It, therefore, gets the least amount of sunshine possible. At this season, with the sun north and only 50° high at noon, the slope receives sunlight at best at an angle of 5° or 10°. Even in summer it would receive noonday sunshine at but 56°, for as nearly as I can sight, it grades at 45°.

The guide is having no luck whatever over on the small knolls. From the voices in the night and a survey of the country,

A rough plan sketch of the burrow of the last pair of birds found follows.

The ridge is a clayey, dusty soil, being recently decomposed lava which was not encountered except in a few small areas in the excavation of the first bird's burrow, where a tunnel entered the hillside nearly two meters. Above the clay is a bed of moss, one to three feet in thickness; this is very damp at present. A small, broad frond fern grows on the moss with a low, green-leaved, hard-wooded shrub. Occasional "tiki", climbing pandanus, winds up from the slope below where it abounds. This shrubber is slightly to the west or due south from the summit of the hill. It, therefore, gets the least amount of sunshine possible. At this season, with the sun north and only 30° high at noon, the slope receives sunlight at best at an angle of 5° or 10°. Even in summer it would receive noonday sunshine at but 50°, for as nearly as I can sight, it grades at 40°.

The guide is having no luck whatever over on the small moulis. From the voices in the night and a survey of the country,

I would say this shoulder, extending a hundred meters down from the summit,is the only favorable locality near here. We will hunt a little longer them drop down to fei and try to find some Rupi while midday neal is being cooked. Possibility of rail too.

The return voyage was uneventful. We made good time down trail in spite of my slippery tennis shoes, which are quite worn out after thirteen days of possession (eleven of hunting). We stopped for lunch at the orange trees (elevation 1700 feet), where we gathered in the neighborhood of three dozen each to carry below. I am sure I ate my dozen today. At the goat ironwood we saw a native had been up after the billy's front quarters. At the first ironwood, we rested, finding there a can containing honey some one had collected from a wild bee-hive. A couple of chews tasted nice. Arrived just after the Becks went out. Three shearwaters and two ducks and a plover kept us busy until nine o'clock. I am to rise early and search for rail with guide.

July 1

The guide failed to show up this morning until 6:30, so we did not go after rail. Instead, I prepared for a camping trip to Cook's Bay and Opunohu valleys. Mr. Beck struck out afoot, Mrs. Beck and I driving around when the horse was made ready, a raw-boned old skate which did finally surprise us by jogging along a good stretch of road. We overtook Mr. Beck along the bay, stopped at the bridge, and unhitched. Barely had time to break out the balloon-silk shelter piece when a shower hit us. We stood beneath it and kept things dry. Later, stretched it

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July 1

The guide failed to show up this morning until 8:30, so we did not go after rail. Instead, I prepared for a camping trip to Cook's Bay and Ogunkum valleys. Mr. Cook struck out afoot, ate. Cook and I driving around when the horse was made ready, a raw-boned old mesta which did literally surprise us by jogging along a good stretch of road. We overtook Mr. Cook along the bay, stopped at the bridge, and unlashed. Barely had time to break out the balloon-silk amulet given when a shower hit us. We stood beneath it and kept things dry. Later, stretched it

and we ate lunch, Mr. Beck shooting a yellow-bill tern between snatches. I had an idea we were driving to second bay where there is a good store, so neither brought grub nor stopped at stores along road. I have less than a loaf of bread, a can of sardines, and a can of deviled meat,--but why worry here where food is going to waste?

I shot a kingfisher from the bridge. Mrs. Beck saw him twice dive into the water. He was perched upon a limb above it, shaking his feathers when I saw him. -- A considerable tremor of an earthquake, perhaps caused by a large landslide somewhere. I heard it roar before the ground shook. The tremble was sufficient to make leaves flutter.

I carried my outfit on a pole well up stream off the main road, hoping to keep as near the ridge separating the two bays as possible. Saw a clump of bamboo and decided to pitch camp there, but found a deserted shack just above it amongst papaya, orange, coconut, and banana trees. Found three boards which had been out in a few rains and sunshines, and a platform to rest them upon, so need not use the dusty old floor. Shot a dove.

Went out and took up trail. A little farther on I found a native house, and suppose them to be owners of my "squatter's claim", but saw no one. The trail turned up stream after crossing it, and I have followed considerable distance through the open grove of Maupi trees that continuously floors the ravine. Two other clumps of bamboo have revealed no warblers, though I have paused at length and called beneath them. Even the myna is not

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here at the second clump. Elevation 350 feet.

Following on up stream through the Maupi groves, I reached a large patch of bamboo at 500 feet. However, prolonged searching and calling revealed no warblers. Kingfishers were heard two or three times during afternoon. Roosters crowing above, and considerable signs of chickens along route. At four o'clock it became quite dark and soon after, commenced to rain heavily. Had a wet journey back to my preempted shack, where I just had enough daylight left to spread the blankets, oil the gun, and eat one-third of my meagre supply of bread. The boards will probably be rather hard tonight, but fortunately the coconut palm leaves woven and thatched form a waterproof shelter. Heard some ducks flying around about dark.

July 2

Packed up outfit, and, leaving it in the shack, proceeded down trail to the river, crossed over, and came up keeping to the left. Met a native this morning who says warblers are all about here. Perhaps they are not localized, but they certainly are making themselves scarce so far as we are concerned.

Very windy, cloudy day. Found the green dove very plentiful in places. Obtained two with auxiliary cartridges. Followed up stream to about 500 feet, where brush was rather impenetrable. For some reason or other, I am very leg weary today, and unable to cover much ground. Have called in all manner of places and listened intently for warblers. Flushed one jungle cock, but brush was too thick to get in a shot. In the old vanilla fields

here at the second clump. Elevation 500 feet.

Following on up stream through the bamboo grove, I reached a large patch of bamboo at 800 feet. However, prolonged searching and calling revealed no warblers. Flycatchers were heard two or three times during afternoon. Roosters crowing above, and considerable signs of civilization along route. At four o'clock it became quite dark and soon after, commenced to rain heavily. Had a wet journey back to my presently stance, where I just had enough daylight left to spread the blankets, oil the gun, and eat one-third of my meagre supply of bread. The boards will probably be rather hard tonight, but fortunately the coconut palm leaves woven and thatched form a waterproof shelter. Heard some dacks flying around about dark.

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(they once were quite profitable here, but now are too badly diseased to be marketable), I found three doves rather tame and approached near enough to pick out the green-headed, young one. Myna plentiful all day. Not a sign of warblers anywhere. Two natives said they had never seen any around close, so I decided to hike on over to Temae to spend Sunday. It was a fair walk of an hour and three-quarters. I was hungry enough to stop a Chinaman and buy some lunch. The "tinto", as the natives call them, find it quite profitable to drive around the island with bread of their own baking, sugar, canned beef, sardines, salmon, and milk. Skinned out one dove, Mr. Beck doing two in much less time.

July 3

Spent the day reading and writing letters. A message from Stimpson says the ships are expected this week, but nothing is definitely known at the time of writing. Our mail will yet get away.

A native brought us a Noha (?) picked up on the beach. I made it up, but had to let Mr. Beck charm the feathers into their proper places. A very young female bird (Pterodroma parvirostris) and not the Pt. rostrata of this locality. The bird was in very poor condition physically, quite sickly no doubt, and was probably blown here by the high wind of the past few days. Just what its range is we are not certain.

There is a green-winged insect about the size of a mosquite which is very thick tonight.

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July 5

Spent the day reading and writing letters. A message from Stimpson says the ships are expected this week, but nothing is definitely known at the time of writing. Our mail will get away.

A native brought me a Zosa (?) picked up on the beach. I made it up, but had to let Mr. Soon share the feathers into their proper places. A very young female bird (Pterodroma cervicalis) and not the Jt. rostrata of this locality. The bird was in very poor condition physically, quite nearly no down, and was probably blown here by the high wind of the past few days. Just what its range is we are not certain.

There is a green-winged insect about the size of a wasp- quite which is very thick somewhere.

July 4

There is a good-sized rooster here where we are staying, a sort of gray-spangled white, neck, back and saddle feathers being peculiarly, yet beautifully marked. His chief claim to distinction, however, is a magnificent, large, red comb and long pendent wattles, and a high degree of intelligence. A six foot pigeon wire fence with a board gate separates the back yard from the front. Old chanticleer is rather stout and doesn't care to reduce by flying over a high fence. He has discovered that the railing of the porch is a handy stepladder. Cocky as you please, he mounts the front steps and proceeds over to the railing, upon which he hops, and thence makes the gate top by these easy stages. One or two crows, and he hops proudly down.

Everything was as I left it Saturday morning, and there were no signs of any native having been near. I thought an old trail going up the vanilla ridge on which the house stands might lead to the Apunho, so made up my load and came up it aways. It now appears to head more towards the mountain Rotui between the two bays, so I am reconnoitring ahead of my pack.

Killed a rat along trail this morning. Doves are cooing here. I called one close in, but it was an old bird with a cap, of which we have plenty; so, after watching him coo a couple of times, once the few, long coos followed by a succession of staccato, rapid, short notes dwindling almost to silence, the other "oh-oo,oh-oo, oh-oo,oo,oo,oo,oo,oo", I let him go. He held his head down upon his throat, or crop, as he cooed, his breast feathers pulsating with the effort. There are several here, so

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I'm watching for green-headed ones.

Returned down trail and at the old house heard Chinaman's horn. Raced down trail and, of course, flushed a young chicken; I took a hurried shot at it. A cuckoo scolding me from overhead. Fortunately I had in the auxiliary, but he was not quite close enough, so I went on down the trail at double time, only to find myself half an hour ahead of "tinto". Purchased four loaves of bread, but he could not change my one hundred francs so I could get nothing else. Some men there told me there were Meho in the rice beds there, but when the boy went to show me he led me to a flock of weaver birds. Took a shot but got only five of them, and had no time to skin any tonight.

Went up to house and went in search of the trail to Opunohu. Found a Chinaman just off to right of crab crossing on the trail. He produced a twenty gauge and offered to show me the trail, but signified that it was very bad with low trees under which I would have to duck. So I left my load at his place and we shoved on. Flushed two chickens but did not get a shot at any. There is a ridge between this valley and the Opunohu where the ferns are abundant. The Chinaman says Meho is there, but the Frenchmen will get after me if I try burning a patch. It could be easily done.

Returning, I called and shot a dove, thus arousing some kingfishers, one of which I got. Had a good Chinese dinner of rice, string beans and eggs with real Chinese sauce. In exchange, I gave him some cartridges. In the morning we will try to get some jungle fowl. Mosquitoes still bad. This evening I

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Went up to house and went in search of the trail to Opuncha. Found a Chinaman just off to right of crab crossing on the trail. He produced a twenty gauge and offered to show me the trail, but stipulated that it was very bad with low trees under which I would have to duck. So I left my load at his place and we shoved on. Flushed two chicoreas but did not get a shot at any. There is a ridge between this valley and the Opuncha where the farms are abundant. The Chinaman says Kebo is there, but the Frenchmen will get after me if I try hunting a patch. It could be easily done.

Returning, I called and shot a dove, thus arousing some kingfishers, one of which I got. Had a good Chinese dinner of rice, string beans and eggs with real Chinese sauce. In exchange, I gave him some cartridges. In the morning we will try to get some jungle fowl. Mosquitoes still bad. This evening I

saw a myna come in and take food from large chickens. The sauciness with which the myna followed its victim was surprising indeed. Once the chicken pecked at her, but the bird was too quick, following until the hen tried to get a swallow of banana, then darting and seizing the food and flying away. Some ducks flew over us just about dusk.

July 5

We arose at five and have had tea. There are not many birds crowing, but one at a distance is quite live. Stars still shining at 5:45. A pair of doves cooing. Along the route we aroused some kingfishers who scolded us vociferously. Have proceeded quite a ways. The myna has commenced to chirp and chatter, and the woods sound full of them. A kingfisher overhead has been scolding in a coarse croak, and now chatters and leaves our neighborhood. Hardly light enough to write.

Followed a trail over to ridge between here and Opunohu, near which, in tree tops above us, two chickens flushed. Couldn't see the second one after the first had flown. Later, I thought I could see a bird but nothing moved when I shot. Over in the Opunohu we each flushed one without getting shots in. I should have dropped the hen the Tinto flushed, but did not like shooting over him. The rooster I saw was of the gray-back type. The one we saw yesterday was a red one. Both were in the same valley and not very far apart. Flushed one more and the Tinto saw a pig disappear over a ridge. Crossed fern ridge, but heard no sounds of rail and we were on it before seven; I think it's too dry.

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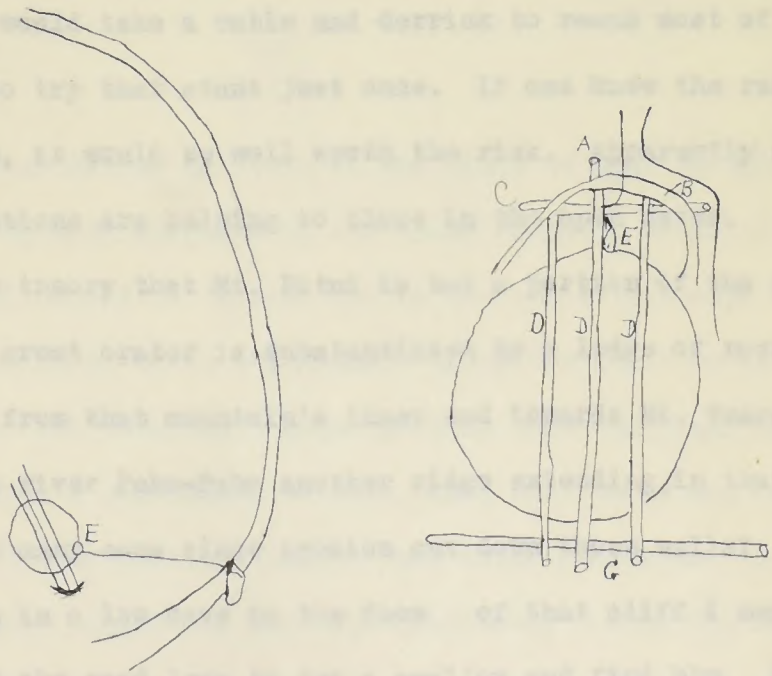
We descended Paho-paho stream to Tinto's, obtaining one cuckoo after very considerable calling, during which he flitted about overhead but would not get where leaves did not hide him. Am informed that the man who knows the birds so well has gone to Papeete, so I'll have to get someone else to take me up Mt. Rotui after Noha.

The following sketch illustrates the style of trap used quite frequently here to catch wild chickens. A springy sapling is bent over and a piece of looped fish line, half hitched to the trigger, holds it bent. The trigger is a short stick held against a U inverted and stuck in the ground and a cross stick upon which rest three sticks (DDD) crossing trail and resting upon (G). Bait is placed within loop.



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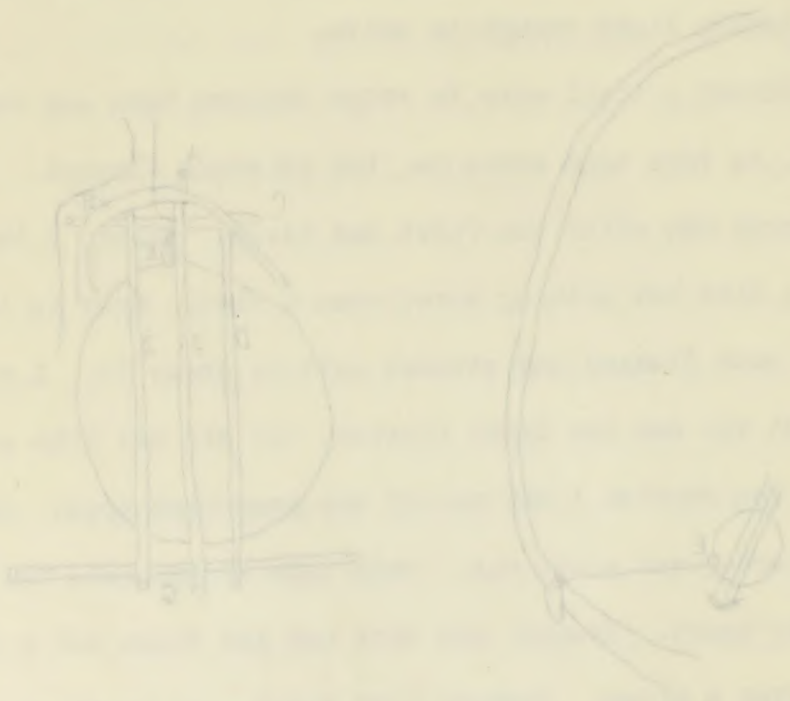

Remained with the Tinto for luncheon and then shouldered my none too light load and hiked down to the road, where I am waiting for the pedler to try to get him to take my junk around to Opunohu. His conch shell is blowing across the bay as he approaches. The red-rumped and yellow-rumped weaver birds are here about the rice fields in some abundance. The little red-bellied we have not yet found. The red-rumped is all through the mountains wherever the grass seeds upon which it feeds are present. The yellow-rumped seems to remain near marshes, and is especially fond of rice.

To the left of Cook's bay (what a pleasure to have been with the old navigator when he lay at anchor here!), looking seaward, are some cliffs with numerous shelves and caverns which should afford good nesting places for petrels, swifts, and tropic birds. From here below nothing can be seen about them. It would take a cable and derrick to reach most of them; I'd like to try that stunt just once. If one knew the rare birds were there, it would be well worth the risk. Apparently stalactite formations are helping to close in the open caves.

My theory that Mt. Rotui is but a portion of the north wall of a great crater is substantiated by a ledge of rock running east from that mountain's inner end towards Mt. Tearai and across the river Paho-Paho another ridge extending in that direction. How many eons since erosion cut down those walls?

Up in a low cave in the face of that cliff I mentioned. Here I had the good luck to get a swallow and find him. Tried to reach a shelf above this cliff where bird-lime is prominent,

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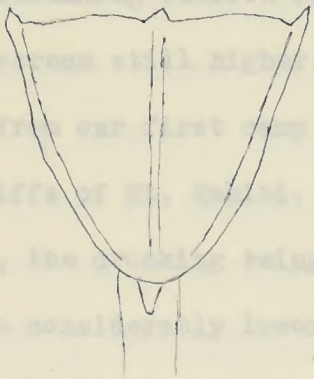
by shinning up a pole braced against rocks on outer edge of floor of cave. I had no more than fifty feet to fall below should the pole have slipped and the shelf not caught me, but I could not make it from end of the pole over onto rocks, so was not able to satisfy my curiosity. I am inclined to believe, however, that the "mearahi manu" my guide hears at night are merely the noddy terns. In some dirt on the cave floor were a few tracks like the sketch below. It is about the widest of them. The native, despite my warning, stepped on the best of the tracks before I studied them out. He had four feet to the edge of the shelf, but still seemed leery. Elevation 500 feet.



After giving my stuff to the Tinto to haul around for me, I changed my mind and came up the talus slope of boulders to the base of this cliff to "listen in" on the calls that come from it through the night while I'm awake. Along the trail up we got glimpses of two chickens. After putting down the load, while arguing about a good place to stop, one, two, three and four chickens flushed from the base of the cliff beside us. I got in two shots; winged one hen, but completely missed the rooster. The hen escaped on sturdy, gallinaceous legs.

Went down with guide to get coconuts for drinking.

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Went down with guide to get cocoanuts for drinking.

Flushed two chickens from trail where they had cleaned up a lot of coconut I scattered along. We baited and set four traps along base of cliff. Returning with four coconuts, I drank one, ate three oranges, four bananas and two papayas. Flushed two, one, and two chickens. Tried to lead a running rooster through bananas, but didn't succeed. The roosters here are of the red variety, at least the three I have seen. Saw that traps were all right and came on up to cave to await any early home-coming bird or feeding swallow. It is now too dark to shoot, or to find the bird, and almost too dark to write. Well, some may linger late tomorrow.

6:30. While I was descending, the calls began, a croaking intake and a screaming outflow of breath. The croak is high-pitched, and the scream still higher. This is the call that Mrs. Beck and I heard from our first camp in the Punaruu. It came to us from the cliffs of Mt. Tahiti. It may be the strange call heard on Monaputa, the croaking being similar but the shrill cry unlike that. Also considerably lower in pitch. Oh for just one specimen to prove the bird's identity! The rest we could collect at sea. Twenty minutes of calling. I'm sure of at least two birds. Now there is a lull so I must save my candle. Half a dozen more calls were heard before I went to sleep. Although awake often during the night I heard nothing of birds.

July 6

Down in the dark depths of the forest I failed to realize how light it was, and consequently did not get up to the cave until 6:20. The birds commenced calling considerably after five

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o'clock and quit shortly after six. A shot failed to bring anything out from the caves. There was one bird calling both this morning and last night, close enough to have been guilty of the sign below the place I tried to reach yesterday by pole. Like the boys with the Noha, this native must think each call means a bird. Half a dozen in that case could produce the justification of their adjective "mearahi".

Might as well go try for chickens, I guess. Of four seen and two shot at, I got but the one which sat quietly on her roost while I shot. Should have dropped a rooster. He flew from jungle near me and made a strenuous effort to perch on a branch. While he was fluttering madly in the attempt, I blazed away and apparently only winged him, for he was not to be found near where he came to ground.

Returned to camp and skinned out cuckoo, swallow, and hen. A tree in which the doves find food of a cherry-like fruit was near camp, so doves were always fluttering in the tree tops near. A kingfisher was in the neighborhood too, but I couldn't find him. Heard a tropic-bird high in the cliffs above, feeding its young, so it sounded. Packed up, and, with considerable effort, carried pack down to road. Saw two chickens, the second a hen with chicks. I foolishly went after the hen instead of the chicks, and consequently got nothing. I should have satisfied myself with one chick, for they were of the brown type.

Had quite a long wait for Tinto, and then rode barely a kilometer, when a young fellow said he knew both Noha and Upoa (the old fellow told me the cliff-dwellers were Upoa) and their

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hang-outs and would take me to them. We left his Fare at three o'clock. There is little hope of reaching summit unless trail is good. Ate some fruit,a native one, very delicious, and about as I imagine a quince. Flushed one chicken and heard doves and kingfishers. The trail soon dwindled away, and what was worse, we struck some lantana which detained us until dark at 1350 feet. He tried to make me believe a hole in the rocks was a Noha hole down about one thousand feet. He was also mistaken when Upoa commenced calling at six. There must be quite a few birds in that cliff ridge. None on this one we are assailing. At eleven o'clock the Noha calls awakened me from my none too restful slumber on uneven, coarse, lantana boughs. Before we again went to sleep heard a six-noter near at hand, between us and main ridge--we're on a shoulder.

This morning reveals a cliff whence the sound came last night. There were two birds calling, as they conflicted occasionally, and we thought we heard a youngster at times. The call is distinctly different to the regular Noha, and may be another bird. No cave or hole in sight where the nest might be found.

July 7

This was a waterless camp, of course, and I fear we have a waterless day ahead of us, but the boy insists that oranges grow above. I pray they do, for otherwise we will have the whole day on one I carry in my pocket, and the remains of a lemon I suck when my mouth gets too dry. Our bed certainly

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July 7

This was a waterless camp, of course, and I fear we have a waterless day ahead of us, but the boy insists that oranges grow above. I pray they do, for otherwise we will have the whole day on one I carry in my pocket, and the remains of a lemon I suck when my mouth gets too dry. Our bed certainly

merits description. We tramped down some lantana on the point of a spur above a rock, and over it some tall, coarse grass. This formed a pocket with a decided hole in the center, into which the native soon settled and slept. I slid down against him but was uncomfortable, so when Noha awoke me I took the carrying pole and made a lower side of it. A lantana stump held it from sliding. Above this bulwark I managed to remain for the rest of the night. Towards daylight the calling of six-noters and Noha ceased and Upoa commenced, but was soon drowned out by a great crowing of many roosters in the heads of the valleys and on talus slopes below. There were no less than ten of them, I'll swear. Three or four hawks up with daylight, encircling the peaks and calling.

Four hundred feet of lantana and finally grass, ferns, and guava. The guava was our only hope of making the ridge, so steep did it get. At last we came to our rope's end and had to turn back, sans Noha, sans Upoa, sans Manu. The descent is always the worst part of steep mountain climbing. One cannot see the footholds below, and having shoes on cannot feel them either. But we got safely down, pausing to indulge in the delicious luxury of an orange. Packed up and descended the three hundred feet more of lantana (puta puta) and here we are at the first trickle of water, forming a pool about the size of one's cupped hand, but sufficient to supply us a much needed drink. One advantage is that we couldn't drink too much too fast. At the next water we'll lunch. Will make the Tinto and go on. Are the notes concerning old "six-noter" worth the day

merits description. We tramped down some lantana on the point of a spur above a rock, and over it some tall, coarse grass. This formed a pocket with a decided hole in the center, into which the native soon settled and slept. I slid down against him but was uncomfortable, so when Moba awoke me I took the carrying pole and made a lower side of it. A lantana strung held it from sliding. Above this bulwark I managed to remain for the rest of the night. Towards daylight the calling of six-motors and Moba ceased and Upoa commenced, but was soon drowned out by a great crowing of many roosters in the heads of the valleys and on taina slopes below. There were no less than ten of them, I'll swear. Three or four hawks up with daylight, encircling the peaks and calling.

Four hundred feet of lantana and finally grass, ferns, and grava. The grava was our only hope of making the ridge, so steep did it get. At last we came to our rope's end and had to turn back, sans Moba, sans Upoa, sans Mann. The descent is always the worst part of steep mountain climbing. One cannot see the footholds below, and having shoes on cannot feel them either. But we got safely down, pausing to indulge in the delicious luxury of an orange. Packed up and descended the three hundred feet more of lantana (puta puta) and here we are at the first trickle of water, forming a pool about the size of one's cupped hand, but sufficient to supply us a much needed drink. One advantage is that we couldn't drink too much too fast. At the next water we'll lunch. Will make the Tinto and go on. Are the notes concerning old "six-motor" worth the day

lost and the expense of the man?

We lunched upon Vii, the native fruit of the tallest and most graceful tree of these islands. Had a coconut to drink and struck down the road, leaving outfit with guide to give to Tinto. I finally decided I had better stop and inquire concerning Tinto's route. Where I stopped they set out a roast chicken for me, and bananas. I did justice to both joints of both legs and a slice of breast, half a loaf of bread, and some jam. Then missed a passing yellow-billed tern, accompanied by a noddy. Had to run up beach in attempt to get a good close shot. To show off and take revenge upon the myna, I made a flock and pot shot at a bunch that were eating copra. Killed three and winged two others. Skinned out the worst to show natives how it was done. The skin was too bloody to save. Beach sand is a bit too dirty to substitute for cornmeal. I finally learned that my Tinto did not come this far. The fellow who seems to run this house hitched his horse to a cart and we drove after it. The Tinto had carried the stuff back to the guide's house instead of leaving it where he turned. The cart driver has agreed to go up the mountain with me for what little money I have left after keeping out my fare to Afareaitu.

July 8

We did not get breakfast early enough to get started before 7:45. The guide followed a tern down the beach. There were several yellow-billed terns about the lagoon, and I could easily have obtained a few, but they would have spoiled ere we return

lost and the expense of the hunt.

We lunched upon Vili, the native fruit of the tallest and most graceful tree of these islands. Had a coconut to drink and struck down the road, leaving outfit with guide to give to Tinto. I finally decided I had better stop and inquire concerning Tinto's route. There I stopped they set out a roast chicken for me, and bananas. I did justice to both joints of both legs and a slice of bread, half a loaf of bread, and some jam. Then missed a passing yellow-billed tern, accompanied by a noddy. Had to run up beach in attempt to get a good close shot. To show off and take revenge upon the terns, I made a flock and pot shot at a bunch that were eating copra. Killed three and winged two others. Skinned out the worst to show natives how it was done. The skin was too bloody to save. Beach sand is a bit too dirty to substitute for cornmeal. I finally learned that my Tinto did not come this far. The fellow who seems to run this house hitched his horse to a cart and we drove after it. The Tinto had carried the stuff back to the guide's house instead of leaving it where he turned. The cart driver has agreed to go up the mountain with me for what little money I have left after keeping out my fare to Aferesita.

July 8

We did not get breakfast early enough to get started before 7:45. The guide followed a term down the beach. There were several yellow-billed terns about the lagoon, and I could easily have obtained a few, but they would have spoiled one we return

from the mountain. It was quite discouraging to see the guide at the very onset, just at the edge of the coconuts, set down his load (half of which is coconuts for drinking) and commence chopping a tunnel through lantana. For nine hundred feet of elevation we have plunged through that cursed shrub so characteristically named "Puta puta" by the natives, which literally means "pierce pierce", but is best understood by "prickly briars". Only occasionally was it head-high, so we just "bulled" our way through. And frequently the intermixed low guava became dominant, or tall grass made traffic more bearable, or a ledge of rock gave a brief respite. Here at nine hundred feet we are cooling off in the shade of a prominent cluster of ironwood (little used now that war-clubs are out of style) where the "puai matai" is a blessing indeed. The sun was exceedingly hot and we hardly paused for breath. From appearances I expect better traveling above.

'Tis much better. Guava knee deep, grass less deep, and ferns not much more deep. Here we are at nearly two thousand feet, seated upon the point of the ridge where we attempted to get yesterday--the know-naught guide and I. How good it feels to be above looking down upon that mass of "Puta puta" through which we struggled in vain. Hawks soaring above the summit, nearly always two and sometimes three. Hope to get at least one. Noha should commence just beyond our next stop at 2400 feet, wherever favorable landing places and digging can be found.

Here we lunched at 2400 feet. The last stretch was through deeper ferns, mixed with shrubs and occasional "ieie". We are at Noha altitude now, but have as yet seen no possibility

from the mountain. It was quite discouraging to see the guide at the very onset, just at the edge of the coconuts, set down his load (half of which is coconuts for drinking) and commence chopping a tunnel through lantana. For nine hundred feet or elevation we have plunged through that cursed shrub so characteristically named "Tuta puta" by the natives, which literally means "pieces pierce", but is best understood by "prickly briars". Only occasionally was it head-high, so we just "bulled" our way through. And frequently the intermixed low grass became dominant, or tall grass made traffic more bearable, or a ledge of rock gave a brief respite. Here at nine hundred feet we are cooling off in the shade of a prominent cluster of ironwood (little need now that war-clubs are out of style) where the "pani metal" is a blessing indeed. The sun was oppressingly hot and we hardly paused for breath. From appearances I expect better travelling above.

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Here we lunched at 2400 feet. The last stretch was through deeper ferns, mixed with shrubs and occasional "lele". We are at 3024 altitude now, but have as yet seen no possibility

of birds landing and taking off. The ridge is very narrow. Rocks are not decomposed very much. Hawks above, and what I take to be a young one answers their calling from cliff below us. Several tropic-birds are sailing about above Cook's bay. Blessedly cloudy, the mist striking the hillside but a few hundred feet above us. The tip of Monaputa is in it, Mona "Temae" not quite reaching clouds. Well, rain will not be unwelcome for drinking purposes in spite of our supply of delicious coconuts, which has already diminished noticeably. We have four left, the largest ones; a dozen bananas; a loaf of bread; a can of beef; milk and two pates. That will keep us alive all right, but one can absorb a lot of moisture on these hill climbing jaunts. Hawks in several directions. Surely we will get a shot at least, this trip. A rather calm day at sea, no white-caps being evident from here. These two bays certainly have considerable depth, appearing just as blue as the ocean from here. What ages were required for making them valleys and then for sinking the island to its present level where coral reefs and flat deltas have formed to some extent! May the next note be about Noha?

And it is, for just before we reached the point on the ridge where I had decided to make camp (elevation 2700 feet), I came into a rather open, moss-bedded place, and the moss gave way, letting me into a runway and disturbing a Noha until it meowed. Dig! I'll say we dug! Noha, by her sounds, was traveling about in the hole, or else I was so excited that the sound came from all directions. But finally I located her and dug into the room itself. Disappointment only in the fact that

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neither egg nor young were to be found. We did not locate the entrance to the hole. Covered it up with hopes of the mate returning tonight. Have a good wide berth on moss, with good sheltering shrubs. Balloon silk erected so as to not shed rain but collect it in pools for drinking. A shower would be a welcome thing indeed,--we've finished the fourth of seven coconuts.

10:30 P. M. and have supped lightly of number five. The native selected the west face of the ridge, while I chose to proceed along the top of it. Not until the summit of the next point was almost achieved did I find favorable conditions. A bird is calling about there now. Looking about, I found some entrances and fresh digging just off to the side of the ridge, and what I supposed was the birds' trail up to its landing place. These prospects petering out, I examined the trail. Beak and claw marks decidedly evident where the birds had ascended a very steep bank. It led to a hole and entered it. This swung down and across the ridge, then penetrated the very ridge horizontally about six feet as a stick indicated. Something within picked at the end of the stick, so I commenced digging for all I was worth. This tunnel was fully a foot broad, which made it not so difficult to cave in above enough to allow me to reach the end. The first fact of note was considerable dung in the burrow, but I thought little of that. At last the bird could be seen, so I cleaned my hands as best I could and reached for his beak and dragged him forth. When I took hold of him under the wings his fullness made me think that it was a female about to lay. Then I noticed the down behind the neck and realized that it was

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an almost grown "Fenana" (young bird). I yelled with delight until the hills echoed. Then I became more sober and released the pressure of my killing hand. Perhaps the young would decoy the old birds to our camp. So we took him in alive and staked him out. A very disconsolate old bird has been calling up that way for half an hour. The dung note now became valuable. The young bird had kept his nest clean by habitual excreting down in the runway a couple of feet. No lining in next, but I found some of the old lining along the burrow.

The native arrived with the glad tidings that he, too, had obtained a bird, so here on the first day we have tied the two other trips. Hopes of more on the morrow. Fenana meows a little. Distracted metua still calls disconsolately. There's a little tragedy in this work. We dined upon corned beef, bananas and milk, coconut and milk.

The first Noha called before it was quite dark, five-fifty, and straggling calls could be heard continually for the two hours we kept awake. Upoa calls from the cliffs below were rather faint but plentiful. A trilled croak, followed by in and out meows of different tone, was designated as Rao by the native, a name used by Tafai for such a call heard in the Papenoo. He also says the Upoa nests on the Motu in the lagoon. I would not be surprised if it is a different Upoa to the one nesting in the cliffs. I have offered one hundred francs to any native who can take me to the nest of Rao. Upoa I still have hopes of obtaining for less money. The calling, though not numerous at any one time, indicates a plentiful number of birds hereabouts.

an almost grown "Bonana" (young bird). I yelled with delight until the bills solved. Then I became more sober and released the pressure of my killing hand. Perhaps the young would decoy the old birds to our camp. So we took him in alive and staked him out. A very disconsolate old bird has been calling up that way for half an hour. The dung note now became valuable. The young bird had kept his nest clean by habitual excreting down in the runway a couple of feet. No lining in nest, but I found some of the old lining along the burrow.

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The first Moka called before it was quite dark, fifty-fifty, and straggling calls could be heard continually for the two hours we kept awake. Upos calls from the cliffs below were rather faint but plentiful. A trilled crook, followed by in and out moows of different tone, was designated as Bao by the native, a name used by Tafai for such a call heard in the Papenoo. He also says the Upos nests on the Moka in the lagoon. I would not be surprised if it is a different Upos to the one nesting in the cliffs. I have offered one hundred francs to any native who can take me to the nest of Bao. Upon I still have hopes of obtaining for less money. The calling, though not numerous at any one time, indicates a plentiful number of birds hereabouts.

July 9

Calls on through the night were not overly numerous, but frequent and close. We camped about in the midst of a stretched-out colony. The "Fenana" made no effort to answer calls, but showed some uneasiness and felt the cold considerably. A shower this morning. The native hung up the food bag last night, and of course upset the milk. We had about half a coconut during the night, finishing it this morning. A shower, and we collected a quarter of a milk tin of water. Ah! a delicious sip of the medium of life! A mouthful! Spew! What an awful taste that oiled silk gave it! The native refused to touch his half.

We went up ridge past the hole where the youngster was found. Discovered two new holes higher up which appeared inhabited, but proved to be empty. The rest of the ridge to the summit (we stopped at 2750 feet) was undoubtedly too rocky for Noha diggings, and, as the hawks were not present, we retreated, searching either side the ridge for holes but finding nothing promising. Deciding it best to save what birds we had, we left camp at nine for the plantation whence we started.

Two hours found us at the ironwoods. What sturdy trees they are to cling to this knife-edge of rock! My view of the rest of the island from this central location upholds the theory of an immense crater having been drained out through two valleys which now are drowned by the sea, making Cook's and Opunoho bays. The remnants of the crater connecting this apparently isolated mountain with the rest are perfectly evident on either side. The cliffs on the inner side of the crater add their weight to the

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evidence and it is indeed impressive.

One Meho call was heard this morning. I'll probably spend a week or so at Temae trying to get some of them about the marsh, or else up at the Noha camp. I'll try the sapling-string traps next time. There is considerable evidence of hawks having eaten rats along the ridge we have just descended,--feathers, bones, and rat fur. No other birds besides the hawk noticed since daylight.

We drank our last coconut at the ironwoods,--delicious repast,--and soon made our way through lantana and guavo to the coconut grove below, where we found two good, large coconuts on the ground. Was all afternoon making up the birds.

July 10

A very windy, warm day, spent alternately in writing letters and reading. A flock of terns, perhaps fifty, were fishing just beyond the reef early this morning. Mosquitoes very troublesome and wary,--one cannot even get revenge by killing them. I spent a few minutes at sunrise along the beach looking over the coral and shell fragments, admiring the few complete beautiful shells, and watching the very interesting hermit crabs.

Why should they be called "hermits"? They are seldom found alone, and delight exceedingly in a squabble with the nearest neighbor. Merely because they withdraw themselves into their dwelling when disturbed hardly seems sufficient for the opprobrium attached to them. What an adaptive feature it is, their claws and outer legs closing the aperture in perfect form!

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And how many years must have been required for the development of that body, spirally twisted to fit the right hand twist of the mollusk shells in which they live! What discriminating collectors they are too! Most of the really beautiful shells you will find inhabited by them. There is no end of variety in their choice. Here is one who has his house painted in a striped pattern, with alternating dark brown and lavender bands following the convolutions of the shell. Another prefers a dark purple straight. Three preferred plain white, simple shells, and one of them is badly in need of a fresh coat of whitewash. Eight selected white houses, but chose those which were ornately decorated with scroll-like buildings of the past generation. One has such an ornately trimmed home with each tubercle tipped with black. Another has a dull gray abode, with cross-grained shading. Four selected wave worn inner fragments of large shells.

July 11

The ship had to come to this plantation for some copra, so I had no trouble getting it at about seven-thirty, via a canoe and the boy of all work about this place. Outside the reef I noticed the three common terns, noddy, white, and yellow-billed, and boobies, not in any flocks of size. Sea rather rough. The Becks were at the dock to ship for Papeete. He has not been to the island, so I am booked to go there Saturday for the week-end. I am to ship raw birds to him Monday morning. First to camp upon warbler's trail until at least a few of them are obtained;

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then pigeons and rail until called to Papeete to ship for our next field. Had Mota drive me to Matea, whence I proceed inland to make a camp where a native claims the pigeon is.

This afternoon took boy and canoe and bagged two yellow-bill and one noddy terns. Returned to the house of the man who is to guide me. Set to work making up birds, the usual crowd soon congregating and seeming interested, as usual. After I finished, the daughter of the guide set dinner for me, the best part of which was the taro, in spite of the four full-grown and apparently lonesome girls who crowded closely around me and entertained me as best they could in their native way, but it is a coarse and vulgar way. After dining I " " a little for them.

July 12

We arose at four A. M., and after a few minutes hit the trail up valley, enlightened by my newest investment "te mori matai", or in English, a lantern. At five, we are resting at two hundred feet. Roosters have been crowing along the route. An Upoa calls from cliffs above. Kingfishers heard several times. My instructions to the guide are first the pigeon, Rupi, and then the warbler, Omamao. Upoa calls again, or it may be the Rao. I doubt if Upoa would be both cliff and low land nesting on the same small island. This guide says the hawk has not been here twenty years. At the same time he says the Rupi never was abundant. Perhaps at last we have found that rarest of Polynesians in Moorea, an honest and truthful one.

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The green dove, Nupa, commenced cooing just as daylight began to break. One or two distant shearwaters calls were heard about then also. Rooster crowing increased. Some were very near but the guide would not let me shoot for fear of scaring the Rupi. I wish there were some nearby to scare out for wing shots. We stopped at six hundred feet amidst an open Maupi grove, where he thinks the Rupi dwells. Ate breakfast. Still no sign of the pigeon. Rain, but only blustering squalls. We have made two other stops and have attained an altitude of one thousand feet with not a sound or sign of any birds save the kingfisher. A dismal, cloudy day makes very poor hunting indeed. Just passed some very interesting flowers of which I would not even guess the family.

Swung back around head of valley, maintaining one thousand foot altitude. A hawk screaming overhead, and roosters crowing up and down hill. Finally the hawk made a circuit of the cirque against the cliff that is Tohivea Mount. I called it by sucking and whistling, but got only a long shot and a miss. No signs of Meho here, though it has been a cool, wet day. We crossed our trail and swung down to five hundred feet. In some tall trees where the guide explained he had seen Rupi lately I called and he thought he heard one. So when I saw a dove-like bird high in the tree tops I shot it. It was only Nupa, the common green fruit-dove. We then tried some bamboo patches below for warblers with no result. Ironwood growing alongside them. Got a long auxiliary shot at a kingfisher but did not get the bird.

The green dove, Ngpa, commenced cooing just as daylight began to break. One or two distant shearwaters calls were heard about them also. Booster crowing increased. Some were very near but the guide would not let me shoot for fear of scaring the Hupi. I wish there were some nearby to scare out for wing shots. We stopped at six hundred feet amidst an open Hupi grove, where he thinks the Hupi dwells. Ate breakfast. Still no sign of the pigeon. Rain, but only blustering squalls. We have made two other stops and have attained an altitude of one thousand feet with not a sound or sign of any birds save the kingfisher. A dismal, cloudy day makes very poor hunting indeed. Just passed some very interesting flowers of which I would not even guess the family.

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In order not to go in gameless, I decided to get what chickens I could. Hearing one cackle, I crept down upon him and got a good still shot when I was just able to see his tail over the brush across a creek. He was black-breasted and tailed, silver-necked, and reddish brown wing coverts, back and saddle,-- an old bird well spurred. Later, we heard one crow in some open guava (ex-vanilla plantation) and I was able to get a good shot at him while he was crowing his last. Down the trail I missed a running shot. This valley is not only well stocked with fowl, but for hunting it is more penetrable than any I have been in, and one has a better chance to drop flying or fleeing birds.

July 13

Decided to give this Deacon another day for warblers and pigeon. Did not get started until seven-thirty. Tried the opposite side of valley. Two large groves of bamboo but no results, though the sun was shining brightly. Have got disgusted with myself for even thinking of coming in where Beck had hunted two or three times without seeing or hearing of the birds, so am now off for the valley where I failed to kill two warblers.

The native would take me there tomorrow in the cart but not today. A fellow was at the house who came across on the boat. He told of an American and an Englishman with him on it who got off at Afareaitu. Could it be Dr. Campbell? Well, I was so disgusted with the people at Matea that I prepared to walk back to Afareaitu and get Mata's cart for my things. No one was at home when we reached there. The Deacon had a boy bring me in a cart

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when he saw I was determined to go. Box of supplies and mail from Beck, and a letter from Dr. Campbell who is returning on this route from New Zealand and Australia.

July 14

French national holiday. Decided to swap it for Sunday next and rest up from my two sleepless nights in the house at Matea, where half a dozen kids had the whooping cough and the older people caroused all night.

July 15

Came up Afareaitu valley to see if I could again find the warblers seen the second day in Moorea. No luck as yet. Obtained one kingfisher along the road from three shot at. Missed a splendid opportunity to drop one of three fowl from the air. They took wing of a clear sidehill, and I should have dropped at least one. Doves very prominent. "Oooh, ooh-ooh-oohhh! Ooh,oh-oohh! Ooh-ooh-oohh!" Kingfishers singing or chattering frequently. Roosters crowing. I called a cuckoo and obtained it by shooting at close range. They seldom come in close enough for the auxiliary and are very difficult to discover at decent range. Sky looked threatening this morning, and it has now commenced to rain, so there is little possibility of getting warblers. It only sprinkled, so no trouble. Warblers refused to chirp. We may have to come after them in their breeding season.

On the down trail I stopped at a likely looking place,

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stretched out on my back and sucked my hand at length (I was perhaps doing the same thing thirty years ago in a cradle), but this time I got results. One can see a large portion of the leaf-green canopy overhead in that position. I saw a bird enter it. Jumping up, I concentrated my attention on that portion of the leaves where it stopped. Soon a cuckoo was glimpsed. After considerable calling it came down to the branches overhead, close enough for the auxiliary, but I could not get a shot at its head so aimed at the abdomen. It flew away. Just before it disappeared, or would have, through the canopy of leaves, I dropped it with a large charge of ten shot. Broke a wing and didn't leave much tail on the bird. It squalled madly when I picked it up, and another answered from nearby. I got him too after prolonged calling, during which he circumvented me at a distance, but finally came in under the leaves too close. I held off to one side just the least bit and so did not injure the skin as badly as the other two. Later on I heard a rooster crowing and stalked him. The crowing increased in loudness rather rapidly, but I didn't understand at the time. Saw a cat but hesitated shooting it for fear of scaring the rooster. Then something stirred a rod or so ahead of me, and there was Chanticleer coming my way! I moved the gun. He saw it and me! How he did scurry away in a zigzag course through the ferns and tree trunks which baffled my aim! The cuckoos' gizards showed the following contents:

1357 ♂ . 8--10 large moth caterpillars.

1358 ♂ . 3 large caterpillars, 1 cicada.

1359 ♂ . 2 " " , 1 skink lizard.

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July 16

Packed up to ship for Papetoi. The boat did not arrive until ten. Carried luggage to the dock and learned that the Donald boat was not coming over, and this Debouche boat was returning direct to Papeete. Wrote a message to Beck. Returned to room. "The Popa proposes and the kanaki disposes." Am now arranging for a boat to take me out in lagoon to islet near pass here at Afareaitu; there may be birds of interest there. At least I might pick up a tern or two to work on this evening and in the morning.

We had a really interesting time crossing the harbor, for waves of a choppy nature reached clear in to the wharf. They were small waves, of course, but still as we canoed along them they tossed us considerably. In the shallow lagoon a strong back flow of water made it necessary to get out and pull the canoe along until we rounded the point. Once in the lee of the islet, there was rather still water across the deep channel between the shore and the islet. At the islet we found a tatler which I collected for a mid-July record. It had plain winter plumage, and was the only bird on the island that we have found. There is considerable rubbish, brush and grass beneath the coconut trees, and some shrubbery, vines and ferns, but no signs of tubinares that I can find after a diligent search. Beneath many of the coconut trees signs indicated that terns, no doubt noddies, roost in numbers in the tree tops.

(The hull of a wrecked kid's boat floats by.)

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The island is located on the leeward side of the pass,

a few hundred meters behind the reef. What is its geological history? To windward of the island is a stretch of coral rock in situ, five to fifteen meters wide, and extending in a curve around the south end. It looks to me like an ancient reef now elevated one meter above the lagoon level or the level of the present barrier reef. But the stumbling block to that is that the old reef is not continuous. It is feasible to conceive that debris was piled up on this leeward side of the pass in former days as it is now. Then suppose a sudden submergence of several meters permitted the ocean waves to roll in over the lagoon. The coral would take hold on the highest points first and grow where the waves were most broken. They might be unable to have survived elsewhere, and that would let this reef build up. Then an elevation might boost it up above water to death. The old reef beyond would again revive, and wind would polish this down to its present condition. The island to leeward of this rock ledge suggests a heap of coral wave-piled. -- A yellow-billed tern passes down the reef. -- There is a high sea today and the roar of the magnificently breaking waves is terrific. The lagoon is quite rough. I thought this was nearer the reef and expected more terns to be passing. As I look down the reef northward, Pt. Temae attracts my attention. Can its landlocked lagoon, Lake Temae, be explained along with this island? Food for thought!

Obtained nothing more going in, but a young girl brought a black jungle fowl rooster, for which I paid the agreed five francs. We have a very fair collection of them now, but there

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July 17

Sent outfit around to Morepa by Chinaman today,--no bargain as to cart. Walking is good, so it is even better than shipping. Young fellow named Cook may go over with me. He is killing time here till a boat goes back to Papeete.

July 18

We left at seven-thirty and hiked to Morepa by eleven. Myna and weaver birds along route. Tarapapa at Vaiere Bay on ship stakes. Reached Vaipahu at two. My former guide up Rotui hitched up to the cart and we went back about a mile for the things. Then drove on to Papetoi where we left the horse and took a large canoe for the islands. Wandering tatler and yellow-billed terns seen along the lagoon beach. Three yellow-billed terns were bathing in some shallow water, so when two were lined up I shot them. One was a fine, black-capped specimen. The owner of the island was not at home, but we found him out at the point of the island with another fishing. All right to hunt birds. He directed us to the booby roosts around the island.

As we approached, the boobies were still flying in flocks of ten to twenty just beyond the reef. It was growing dark (five-thirty) as we arrived at the rookery. A frigate bird flew out from the tree tops. I succeeded in dropping her after about five shots. She fell in the lagoon after flying

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away some hundreds of yards. There were perhaps two hundred boobies disturbed from the ironwood trees by my shooting. The Upoa nests inland somewhere. A native has agreed to come tomorrow and take us to them. No signs of other birds than boobies as dusk fell. No night calls as yet.

It seems the Donald boat came and went back this morning, so I missed what corn-meal or mail Beck may have sent. Good coral sand must serve tomorrow and next day. The boobies apparently do not nest here, nor do the frigate birds or the tropic-birds. Patea (red-billed) reported on mainland. No sounds of terns roosting yet, though the yellow-bills seemed thick here. The natives say the yellow-billed does not lay eggs here. The native name of the booby is "Uau"; "Otao" is the frigate bird. The boobies settled and quieted down about dark. Not a whimper or croak comes from them now. Two days will be none too much for exploring this island which is surrounded by an ancient reef now elevated a meter above high tide.

July 19

Rained a little at intervals last night, but we kept dry. The boobies had gone to sea when we arose at six. The two native boys returned last night and slept with us. We are now looking over the Upoa diggings along the west side of the island. Holes are rather scarce, and long and crooked beneath roots of pandanus trees. Soft coral soil, shells, etc. Hole four meters or more in length. The nesting season, however, is over, and the notes about the hole are our only recompense.

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We found perhaps as many as a dozen holes, but no signs of habitation, which confirms the natives' statement that the young birds have flown. A flock of boobies off the reef a short distance fishing. A tour of the island revealed no other birds. Terns are surprisingly scarce. We are now in the canoe headed for some cliffs in which there is a good-sized cave, and where "Patea" is supposed to dwell. Will it be successful? I would like to find Rao there.

We had to cut a short trail into the cliff through lantana freshly grown over an old trail. Extending up the face of the cliff is a network of tree roots of a good stout size. Up these the local guide ascended, and I followed to about seventy feet, where a shallow opening revealed a shallow cave about ten feet long and six deep. But it, too, had been deserted. All we found was a long tail feather showing the birds to be the yellow-bill tropic-birds. A smaller hole in the same cliff produced the same result. Whether Mr. Beck desires any boobies or not is the question now. They are all that are to be had from the island in quantities. Yellow-billed terns may be picked up along the lagoon from here to Papetoi. Where they roost I do not know. The boobies certainly do not nest here, or one could find the remains of the nests. The flock of them is still fishing just beyond the reef. A blue heron flies overhead, reminding us that we have not as yet seen a white one here.

Returned to the island camp and skinned out yellow-billed terns and frigate bird, using sand taken over from the mainland beach where some was found dry beneath coconut and ironwood trees.

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The boys went around the island with gun and searched further for Upoa but found nothing. As dusk fell, the boobies came in and I shot nine, getting them in six shots so closely do they roost; but I had to pull while the second was alighting in each case. All but one or two would take wing at each shot but soon came back. Was too dark to select color varieties, but I got a good series from young to old in plumage. They are now all boxed and ready for transport, but I fear they will be quite ripe ere they reach Beck. If the ship does not sail till Thursday I may skin out some of them. Will try to get some more mature plumaged yellow-bills tomorrow as we go in. Fear the ship will likely as not take a notion to go directly back as it did before. The unreliable schedule is quite bothersome to the "Popa".

July 20

The boobies squawked a little during the night. No sounds of other birds. They had left this morning at daylight, all save one slightly maimed by last evening's bombardment. Picked up two yearling yellow-bills as we canoed in to Papetoi. Had very poor shooting. We poled most of the way against a head wind. Two tatlers about island this morning.

Both boats came over as per proper schedule. Put things on Donald boat, where I found bag of cornmeal and shells. A roll of cotton, and I could hunt here for a month. We started back, but hearing about some warblers returned and spent four hours searching for them and going up the canyon a short dis-

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tance, where our only success was a cuckoo. Myna bird very prevalent. I see nothing here to even suggest better hunting than it has been elsewhere, so do not feel inclined to spend time here hunting over new territory when I know of the habitat of two of the three desired birds.

The little pony made short work of the road home, but at that, we got caught in the fore-running shower of a considerable rainstorm. It felt just about like getting home, so comfortable have these people at Vaipahu made me.

The cuckoo's stomach revealed two gekko lizards and one large caterpillar. There were three or four yellow-billed terns in the lagoon as we came along. White and noddy very scarce.

July 21

Had Vaha drive me to Temae, and there secured services of the guide I had up Mona Tiarai. He took me to the place where he has heard the most Meho, or rail, along the lake shore. Have pitched camp where the roots of a coconut tree furnish a slightly drier elevation than surrounding muck of marsh. Am having the guide cut a lane to the edge of the lake, which is within gunshot of camp. Here, if the rail reveals himself at all, patience should get one. Then I searched the few places I thought most likely to reveal signs of the bird, but could find no tracks or place where a trap might be set.

As dusk approached, the weaver birds, mostly the yellow-rumped, swiftly flitted by in flocks of twenty or so. Somewhere

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As dusk approached, the weaver birds, mostly the yellow-rumped, swiftly filled by in flocks of twenty or so. Somewhere

in the marshes rail piping was occasionally audible. It was well past five when ducks began to appear in pairs and flocks, flying about indefinitely, but tending to lower down over the rice fields. Splashes from the lake must be the large fish,--they are frequent. When darkness drove me from my perch in the tree tops I descended to the camp, and as I ate dinner kept my eye on the runway. But as I retired, once again I had the feeling that Meho was master of the day. The few pipings heard were distant, but I hoped for better results in the morning.

July 22

It rained very heavily last night or early this morning, but the balloon silk, stretched tightly and steeply, proved thoroughly efficient. Nothing got wet. Water stood above the marsh muck this morning. During the day I searched in the reeds whence came the rail pipings last evening, and once I thought I heard murmurings this morning. Found nothing after continued search in dense reeds. A large flock of ducks remained on the pond most of the day. I wonder where these weaver birds roost. Many flocks of them pass to the southeastward every evening from the rice beds at the northwest end of the lake. Why not roost nearer their food supply?

July 23

During the moonlight night I thought twice that I could hear rail, but upon sitting patiently amidst the mosquitoes for a repetition nothing was heard. This morning no sounds occurred

In the marshes rail piping was occasionally audible. It was well past five when ducks began to appear in pairs and flocks, flying about indefinitely, but tending to lower down over the rice fields. Splashes from the lake must be the large fish,-- they are frequent. When darkness drove me from my perch in the tree tops I descended to the camp, and as I ate dinner kept my eye on the runway. But as I retired, once again I had the feeling that Mebo was master of the day. The few piping heard were distant, but I hoped for better results in the morning.

July 22

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July 23

During the moonlight night I thought twice that I could hear rail, but upon sitting patiently amidst the mosquitoes for a repetition nothing was heard. This morning no sounds occurred

that even hinted of rail. Well, this afternoon I'll go up the mountain to the shearwater diggings where I heard rail aplenty.

Had to walk down to the Marepa store for provisions, which occupied the morning. Ship came in as I left. The yellow-rumped warblers are the commonest birds along this road next the rice fields. Saw a hawk on the ridge above. Frisby was at Tatamata's with three tourists, a Dr. Smith, Dr. Croft, and Witherton, the former having recently come from Borneo. They invited me to dinner with them. As the Chinaman would not arrive with provisions until one o'clock, I accepted. We had octopus, and it certainly tasted better than it looked.

After dinner I found the guide, but he had apparently settled himself down to a long job and suggested Monday as a good time to go. Found another man willing to go today. We didn't get under way until three-forty P. M., but made the oranges just above the cliffs in the two hours. Heard red-rumped weaver birds high up the hill. Kingfishers chattering every direction. Roosters crowing.

We had just finished dinner when the first Noha call was heard. I told the native, "Hora hitu", and then produced my watch with the minute hand exactly at the hour. So regularly have they commenced calling at seven that I would set a clock by them and not be off more than fifteen minutes. I half expected to hear the Rao in the cliffs below us, but apparently there are none nesting there. No caves are noticeable anyway. I shall search for Noha eggs while up here when not busy after the Meho. He is first. "Stranger" second, Noha third, and

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July 24

The chilliness of the night forced us under the heavy blanket. Clear moonlight. Once, late in the night, I heard a Noha call, and straightway went to dreaming of shearwaters, strange, weird looking birds. Daylight was hardly perceptible but was vociferously announced by chanticleers on all sides of us. Then next the hawks commenced their morning soaring and screaming. Kingfishers chattered. At the place where we were no rail were heard. Saw nothing along the trail, though once a hawk was rather close, but we were down under the brush.

Still damp and dewy when we arrived at the summit. Pitched the shelter, then sent native after two bags of oranges while I dropped down into ravine south of camp and set snares for rail. What are the chances? I am baiting them with crushed land snails and hope Meho likes that food. Have already set out five where conditions seem most favorable, but it looks to me like a hopeless task. All hopes of seeing one in this brush for shooting are scarce indeed. Luck alone can obtain a specimen, I fear. Have heard one or two this morning, not very distant. I shouldn't think they would find these very steep

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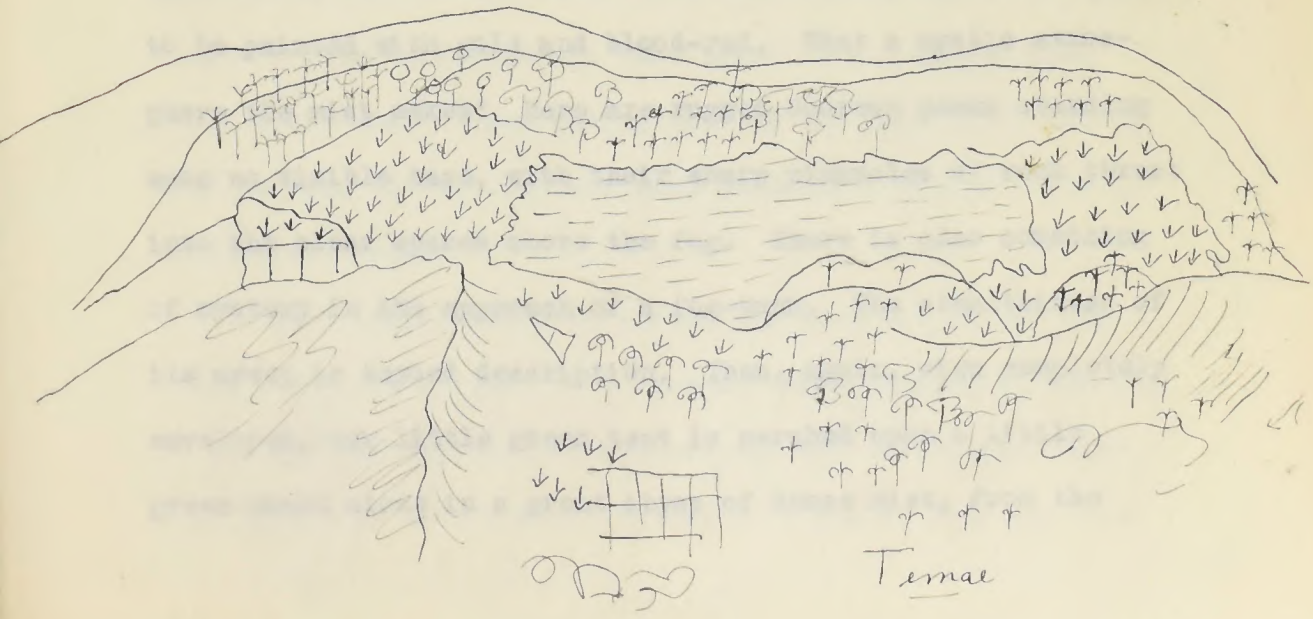
slopes so habitable. I set the traps at the levelest places. The native has returned from the orange tree and is searching for Noha burrows down the ridge where we found the three on the other trip. It seems this is the other fellow who came up here before I did. Clouds blow in frequently and envelope the hilltop in fog. This ravine is almost entirely devoted to ferns, mosses, and lichens, though a very few "ieie" and other shrubs are to be found. Cool and damp, ideal rail locality.

Returned to camp up the Noha ridge. Native had not found any new or inhabited diggings. We ate lunch and then snoozed an hour. This afternoon we set ten snares just below camp where rail called on the previous trip. Also found a straight stretch of territory where we could cut a lane about forty meters long. Then descended the trail to the first water hole, where we tanked up and had a good wash. Native has gone after some fei, though I doubt whether a fire can be made to burn where we are camped. Everything seems too wet. Not many rail calling yet and it is five P. M.



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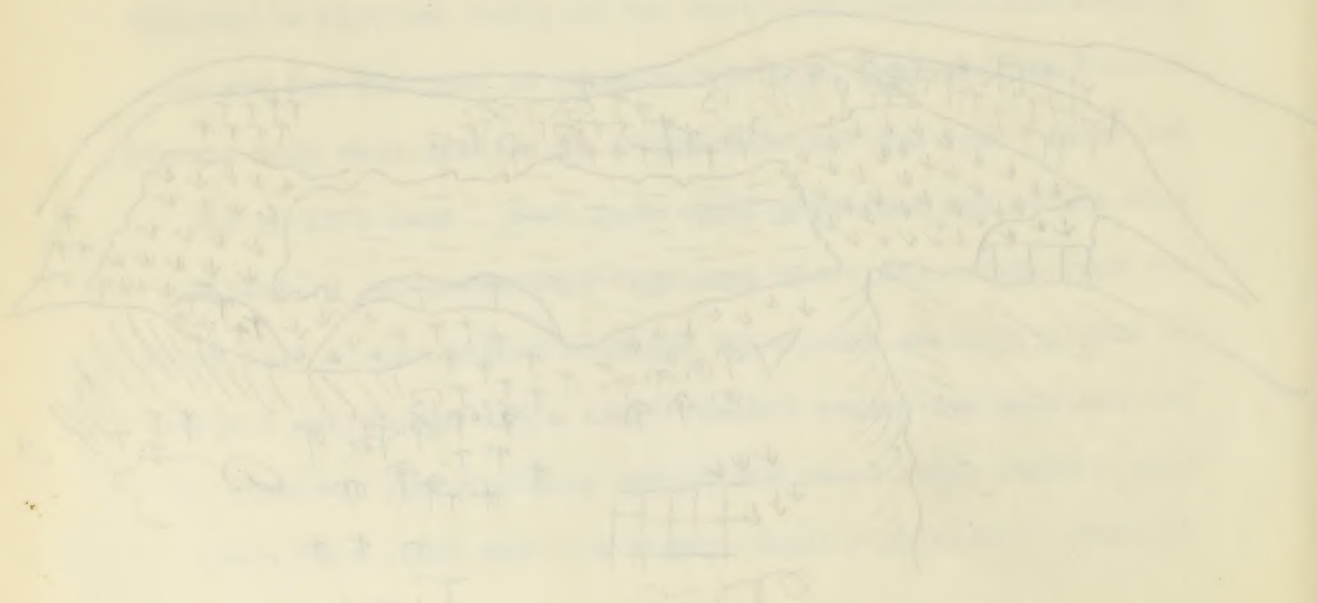

BOOK XVII.

Moorea.

July 24--August 11, 1921.

July 24

There lies Tahiti dull purple in the shadows of numerous clouds. Such a picture! Here and there the highest peaks protrude through the fleecy fluffiness of the cirrus cumuli. Below is the opalescent, tranquil sea; above, the ethereal sky. The clouds are touched with the rays of the setting sun, which now appears through the fog bank around us, a dull yellow disc. Just the reflective path along the ocean toward it can be seen. Now the fog blows away and distant clouds pass before the sun to be painted with gold and blood-red. What a mystic atmosphere the mist makes! Here are rugged Moorean peaks standing upon no visible base, with their sharp pinnacles of rock thrust into the clear spaces above the fog. There is also something of mystery in the approach of a fog-bank. The stealthiness of its creep is beyond description. Then, again, when completely enveloped, our little green tent is perched upon a little green mound alone in a great abyss of dense mist, from the

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depths of which comes a continuous, awe-inspiring, roaring thunder. I give my yodel for the sheer joy of being on a peak. Meho trills in answer not many feet away, but out of sight.

Not many feet away indeed! He was beyond the tent at first; then to the east of it; next, right under our feet within two meters at least, but out of sight. I tried to pounce upon the sound, but luck was not with me. Next he appeared beyond the tent again, having passed completely around it. We will set snares closer in tomorrow. I hope he likes snails. Others were heard about, which is a little hopeful. If they only like snails we have a chance.

Shortly after dusk the clarion calls of the Rao shearwater began to come to us from the direction of those Pohu-pohu cliffs. They might have been down in Marepa, but I'm inclined to favor the Pohu-pohu cliffs with the caves. It is seven-thirty and no Noha have been heard this evening. Perhaps we won't be so likely to find more of them along this particular ridge. The hawks were about quite late. The red-rumped weaver bird (the one that takes to the hills) also heard about dusk. Once during the fog the myna call came up from Marepa, but at the same time children's voices could be heard down there.

This camp would make a good picture. It is too bad I don't carry some sort of a camera. Must send my IA Graflex to the factory and have it overhauled. If the people below come up I hope they will bring one with them. They may find

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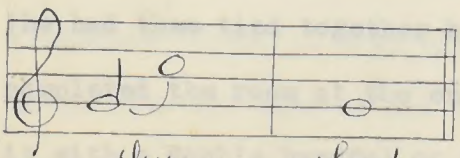
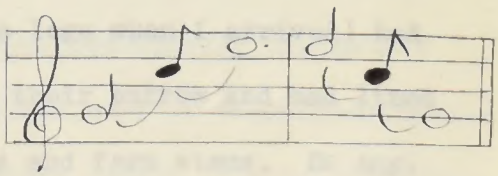
the trail not quite so plain as I said it was.

2:00 A. M. There were Noha calls during the late night. I heard them vaguely as I slept. Finally at one-thirty I became sufficiently rested to awaken and so stepped out to locate the calling birds. They appear to be where we heard none last trip, the ridge extremities in both directions. Beck didn't get all of them along the ridge he ascended, so we might make this trip a little bit profitable with them. Fortunately there is something of value here besides inevitable Meho. I hope these birds we hear, if still digging, are at home tomorrow. I have been trying to think out a description of their call. If the shrill, characteristic, two-finger whistle of a boy in his teens, signaling one of the gang, could be combined with the nasal whine of an ill-tempered, domineering, Tahitian baby, something approaching the Noha call would result. Sometimes the first part is long drawn with a sharp second; sometimes the opposite is true. There are usually two notes in the long part of the call, and a reverting to the first and lower note in the latter part. And occasionally one will give a six-noted yodel far superior in tone and quality to mine. I am convinced that it is the Noha merely doing himself proud. I imagine that the double tones are in and out-take of breath. They seem characteristic of shearwaters, as I have heard them in six species.



Whining, nasal whistle



Well toned, melodious whistle.

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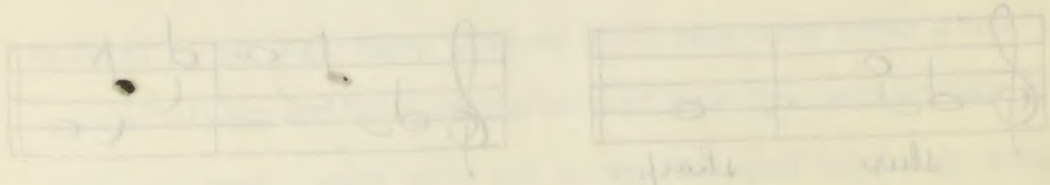
2:00 A. M. There were Koba calls during the late night. I heard them vaguely as I slept. Finally at one-thirty I became sufficiently rested to awaken and so stepped out to locate the calling birds. They appear to be where we heard none last trip, the ridge extremities in both directions. Buck didn't get all of them along the ridge he scouted, so we might make this trip a little bit profitable with them. Fortunately there is something of value here besides inevitable Koba. I hope these birds we hear, if still digging, are at home tomorrow. I have been trying to think out a description of their call. If the shrill, characteristic, two-finger whistle of a boy in his teens, signalling one of the gang, could be combined with the nasal whine of an ill-tempered, domineering, Tashkian baby, something approaching the Koba call would result. Sometimes the first part is long drawn with a sharp second; sometimes the opposite is true. There are usually two notes in the long part of the call, and a reverting to the first and lower note in the latter part. And occasionally one will give a six-noted yodel far superior in tone and quality to mine. I am convinced that it is the Koba merely doing himself proud. I imagine that the double tones are in and out-take or breath. They seem characteristic of shearwaters, as I have heard them in six species.



Although it is quite light I cannot make out the birds as flying. As their calling is rather steadily from one place, it may be that they call from the ground as well as when flying. At one-thirty I heard a rail down towards our snares. Let us pray!

July 25

Meho opened fire at daylight this morning, attacking from the vicinity of the traps. I dressed and braved the heavy dew, coming down past the traps to our battle-line. Three traps were sprung but empty. The snails were not as deposited on the trigger, but not being entirely taken away, they might have squirmed off the fern leaves. At the firing line, birds were heard mumbling, piping, and even trilling in the brush beside us, very close. But not a sign of them in the cleared "No Meho's Land". Hearing weaver birds, I sucked, and succeeded in attracting them to brush within reach of the gun-barrel. There were four red-rumped ones. Hawks about. Rooster crowing in fei.

Also a native is crowing, for, while gathering "pupu" (snails), he followed along the ridge southeastward and now calls "epiti noha". I rush to camp, snatch up a sack, and hasten over there regardless of scratches about the shin and ankle. We search for more holes but find none. These birds (he had them tied together by the legs when I arrived) had completed the room at the end of their burrow and had lined it with a double handful of twigs and fern stems. No egg.

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The burrow was about three meters in length, but not deep, the entrance being beneath a tree root; the landing place and take-away were clear with almost sheer drop on east edge of ridge. Two hawks not far away, so I conceived the brilliant idea of decoying them with a shearwater. Attached ten fathoms of fish-cord to legs of one bird and threw her into air, not far enough the first time and she came down quickly. But next time she took wing, and in three wing flaps had gone the ten fathoms. When the cord tightened she merely sank into trees, making feeble efforts, or at least vain ones, to fly again. In taking wing she went out at an angle of about 30° below horizontal. So, much steeper slopes than that are necessary for their flying, since the brush and trees must be cleared for the wide-spreading wings. I have staked out the two birds because I have no convenient method of carrying them made up. Besides, I want to see if they will call under captivity. They have a whining note when confined (the whine without the whistle), which reminds me of the low noise frogs make when you squeeze them, as boys will. Very little breeze. A sailing vessel seen yesterday just north of the island was visible last night by its light, and is still there this morning, hardly shifted more than the current would take it westward.

We took the north ridge after breakfast and followed along beyond the highest peak of this hill. Several good locations reveal no sign of a hole, but finally the native drops over the side of the ridge and sets to digging energetically. A hole of about three meters length entered the ridge

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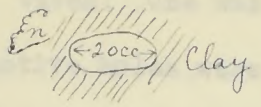

At the end we found two birds still digging. Will they ever quit working and lay an egg? Here it is nearly the last of July, and two pair found had no egg. If the digging season extends from March until August, the raising season should almost complete the year. Why then no birds in October? Eggs laid now could hardly hatch and the young get full grown in two or three months. Are these merely birds which, for some reason, are not going to lay, or are the Moorean birds of a different season to the Tahiti?

We crossed a considerable plateau, a series of ravine heads, and then followed along the ridge until we reached a goat trail crossing the ridge. From there we thought we could see where Beck had been digging, so we went no farther, but carried out our plan to drop down into fei valley and take trail to our camp trail at second ironwood tree. Heard the Noha call from close at hand because the two in the bag objected strongly to the heat. But before we went over into the fei valley we had to get out of a ravine.

As we climbed the intervening ridge we came upon three Noha holes, two of which had pairs of birds in. Both were incomplete burrows, not very long. From them I followed a distinct trail of beak and claw marks to a semi-opening and clear soil on slope, but from there another still plainer

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Had native carry a bamboo of water to camp as we returned. In a jubilant hurry to get dinner over with, I raised the loaf on end and hit it with the tipi. The crust was hard, and the tipi slipped landing fairly upon my hand just above the knuckle of the first finger. I could see the joint before the blood commenced, a sight one seldom gets--to see his own bones. Filled it with cornmeal, which stopped the flow of blood.

Ate dinner and came down to watch the runway for Meho. Staked out eight birds, the first two of the afternoon's jaunt having died, and I having killed the morning pair to work on tomorrow. The staked birds commenced calling when a fog enveloped us. I stopped and watched them twice. The beak is not widely opened, the throat raises, the head is held up. I could not catch an intake of breath or any change in the first short sharp note. All day the birds have whimpered rather indescribably. One Meho called as I left camp. None heard or seen since.

12:00 P. M. Well, we haven't cleaned out this mountain

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yet. Birds have called from both ridges visited yesterday so successfully, while more distant calls hint that other ridges than our rich diggings are inhabited. Our staked birds continue to whine like a litter of a dozen puppies frequently disturbed, and occasionally favor us with the characteristic calls. As we turned in, one Rao called very closely above Marepa valley, perhaps a little astray in the fog then filling that vale. The idea just struck me that we passed a good place to burn ferns for Meho yesterday. Now how to care for these Noha with one hand and get that done too?

July 26

The barometer this morning is .8 of an inch higher than yesterday, registering but 1500 feet where it should record at least 2200. A steamship off to north'ard in direction of Borabora added a little novelty to the scenery. My finger kept me awake so long last night that I slept until after sunrise this morning, so did not go out after Meho. Plan to move camp to the more favorable place along the ridge, but must go down after provisions first. If the birds live until tomorrow, as they should, I'll send them to Beck on the Thursday boat. Tapping barometer lightly restored it to normal and 2300 feet. Fog banks alternated with hot sunshine all day.

As I anticipated, my left hand was quite unwieldy with its cut. I certainly learned to make skins from southpaw Beck. I never realized how left-handedly I worked until today. But I succeeded in taking care of the four birds and one that died during the heat of the day. In fact, my results quite surprised myself. It takes more time to make bodies of fei leaves than excelsior. To save cotton I

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also made necks.

The native, after going the rounds of the trap line, took the gun and went down into fruit belt after "Moa aviri". He was gone all day, returning late in evening with a very badly shot-up hen (both skin and flesh spoiled) and a rooster different from any of mine in having body black with colored back and wing coverts and golden neck.

Very windy and cold toward evening, with intermittent fogs. At exactly seven o'clock the first Noha call was heard. Some more calls at about twelve, moonrise. Our staked birds were very quiet this evening. Their whining at present is somewhat like a cricket's chirping. Well, their misery ends today, poor things! Some of them have indomitable spirit and strive continuously to escape, also showing fight when approached. They can fight, too, very actively reaching for a fellow with that formidable, hooked beak. They use their wings and beak a great deal in climbing about. When the native strung four of them to his belt by their legs, one held itself by its beak most of the way to camp.

July 27

No sound of rail nor sign of them until after I had returned to camp to skin out the rooster, a tough, old bird but quite well marked. The seven shearwaters seemed quite healthy. For transportation I put each in a compartment of burlap sack, separated by a string tied around the pole. In spite of the terrifically hot and sultry temperature from ten to twelve,

also made noise.

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they all survived the journey well. They are now staked out in the bamboo, walled woodshed at Tatamata's, awaiting slaughter in the early morning before packing for shipment. The prepared specimens I packed securely within a bamboo frame. At Tatamata's I found Frisbee leaving tomorrow for Papeete, and infringed upon his friendship to see that the birds were delivered early. He refused the offer of transportation to Beck's and was offended by it, saying he could take them out for friendship's sake alone. He wanted one for a pet. Well, I'm going to give him one to see how long it will live in captivity and what it will eat. I ought to make it a pair because they seem so fond of company. Here in the shed they whimpered in a worried manner until I so arranged them that they could congregate together. Upon moving one lonesome bird over, he thrust his beak through the other birds' feathers, passed up two, and settled contentedly by the third. Was it his mate? Was he getting the scent of the birds?

July 28

Up with the first crow of chanticleer, the wise, speckled white rooster of Tatamata's which so cleverly uses the front door steps and porch to save flying over the back yard fence at the end of the house. Went out to kill the six Noha that Frisbee is taking to Mr. Beck. It took exactly an hour to kill them,--a waste of time and needless cruelty, for we should carry chloroform to ease their suffering. One very hale and hearty fellow I selected for Frisbee's desired experiment of keeping a bird of flight in captivity. Helped them down to the dock, where

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Harrison W. Smith took three photographs of me and the live bird, Noha performing vociferously for the crowd.

Drove to Marepa and got the first baking of bread. Left Tatamata's at two P. M. Very hot. Dr. Smith started with me, but tripped on a snag and strained his knee so that it was inadvisable to continue the journey. He is a fine fellow, as are Worthington and Dr. Croft, all of whose company has been very appreciable the past twenty-four hours. How good it is to meet white men after eight months of natives mostly; and when those white men are superior in their own race and nation, it is many times better. We are now at the first ironwood tree, breathing, and eating oranges left here yesterday.

Lake Temae should be a most fascinating study to any zoologist. A land-locked lagoon of many hundreds of years, what forms of life has it developed besides the large, silvery fish we eat so often at Tatamata's? I have two men for two days to try to surround the enemy, Meho, in his stronghold and obtain unconditional surrender. I have offered a fancy prize for the discovery of a nest, hoping it will work. It seems almost incredible that for a week there has been no rain, but an ominous looking cloud off to the northwest promises a shower at least. If rain will keep the rail out feeding during the day, it will be welcome. Almost anything would be welcome if it would assure our getting Meho.

In watching the gekko last evening attempting to take a bite out of a moth larger than himself,--a beautiful, large night-flier, golden brown below, and darker brown above, with

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Lake Tamma should be a most fascinating study to any zoologist. A land-locked lagoon of many hundreds of years, what forms of life has it developed besides the large, silvery fish we eat so often at Tabamata's? I have two men for two days to try to surround the enemy, Mabo, in his stronghold and obtain unconditional surrender. I have offered a fancy prize for the discovery of a nest, hoping it will work. It seems almost incredible that for a week there has been no rain, but an ominous looking cloud off to the northwest promises a shower at least. If rain will keep the rail out feeding during the day, it will be welcome. Almost anything would be welcome if it would assure our getting Mabo.

In watching the geese last evening attempting to take a bite out of a moth larger than himself,--a beautiful, large night-flier, golden brown below, and darker brown above, with

fiery red eyes,--our conversation turned to local moths and butterflies. It is worth noting that both are scarce, butterflies being confined to a very few species of inconspicuous ones, and the moths to a dozen or more ranging from very small to the large, lunar variety. The gekko is especially fond of moths and mosquitoes. An evening's entertainment is always at hand watching their clever stalking and quick final action in catching prey. A bird collector needs a large, trained gekko to get some cliff-nesting birds like the Rao.

The guide brought along his rooster, so we left him crowing (the rooster) in the fei garden below, and came on up to camp. I have offered a reward if the natives can show me that they actually catch the wild fowl with the string on the tame bird's legs. At home.

The mist clears and is rolling out of Marepa canyon as if the whole place were afire. Pohupohu, too, is filled with fog which clings tenaciously to the intervening, rugged peaks. Monaroa and Atiati poke their pinnacles above the bank that fills the farther portion of Opunohu valley. This half of the island is now clear and ever so fascinating in the brilliant evening sunshine. (There is a most abominable, diminutive gnat hereabouts, which has a nasty bite.) Moa farnu is crowing gloriously now, but no answer. My feet went out from under me just before we reached the guide and rooster, and while descending a few meters of wet, clayey trail. I grabbed fei leaves and made an awful noise.

Tahiti is as glorious a picture as it was the other evening, with flocks of clouds like enormous battleships sailing

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Tabiti is as glorious a picture as it was the other evening, with floors of clouds like enormous battleships sailing

past the evening purple hills. Marepa canyon is once again full of mist.

The guide returned without game. Noha commenced early tonight, at 6:20, calling from a shoulder ridge running down into Marepa canyon. Well, he's safe enough. Calling frequently. Noha called throughout the night. It is gratifying to know that there are enough here to restock the depopulated areas. Rao calls came up from the cliffs below, as usual lasting a little more than an hour after dusk. Meho called at infrequent intervals during the night.

July 29

Noha was calling this morning at moonrise. Diana is waning into darkness now and does not disturb our slumbers so much. Our rooster crowed two or three times during the early morning. The native sat up and smoked and "paurau'ed" for an hour or two while I tried in vain to sleep. They want to dig every Noha they hear, not caring much about Meho. The guide took his rooster and went fight hunting at daybreak. I took regular stand for Meho but only got a few answering whimpers and a trill or two from the brush beside me, into which I could not see. The guide returned with the news that he had engaged two wild fowl in fight with his decoy, but the string failed to entangle the enemy, although one was upset and he rushed in to catch it. However, it regained its feet and escaped. We ate breakfast, then broke camp and proceeded down the trail to the lower orange trees where a rooster crowing in

past the evening purple hills. Marepe canyon is once again full of mist.

The guide returned without game. Moba commenced early tonight, at 8:30, calling from a shoulder ridge running down into Marepe canyon. Well, he's safe enough. Calling frequently. Moba called throughout the night. It is gratifying to know that there are enough here to restock the depopulated areas. Two calls came up from the cliffs below, as usual lasting a little more than an hour after dusk. Mebo called at infrequent intervals during the night.

July 29

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the ravine above led off the native, giving us a good rest.

Foggy all morning and sultry. Sweat more than rolls off one's head. Another bird is crowing from across the ravine. Our decoy works well; I would like to be able to record his capture of a wild fowl by the suspicious sounding string method. There is a small brown butterfly here in the orange groves not found lower. Again the native takes his pet rooster and creeps up on a crowing jungle fowl. Now the crowing is close together. Now the native imitates a hen cackling. The crowing ceases. Then the wild rooster cackles danger signals for a spell, after which he recommences the crowing after having moved to a new location. Another wild one crows from higher up the ridge. I can hear the native breaking brush as he tries to stalk them. I think the jungle bird is wise to the fact that there is too much noise in the direction of the pet rooster. At any rate, he seems to be heading for the ravine above us. I'll try to head him off. He probably sees or hears me now, for he's cackling "Danger!" Close enough to shoot, but I cannot see him. The native comes up, so I let him take the gun and go after the bird. The cackling ceases abruptly. That is the last heard or seen of Moa aviri, but the boys are setting some traps here in the ravine for him.

I pushed on ahead, and at end of fei took to south ridge which led me directly to Aihiri hill. The situation looks assuring and rail trilling and piping nearby sound quite gratifying. The men were a long time coming, and then had not brought any oranges, so I had to send one back for oranges and water. We

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drank the bottle of water at lunch. The new man I set immediately to work digging our trenches through the brush, ready for the battle tomorrow morning. Had him clear a good, wide swath across the level top of the hill, while I set up the tent. Having pitched the shelter, I conceived the brilliant idea of an excess of ferns for a mattress. They were already cut, so I merely had to haul load after load to camp. Halt! What is this cluster of dry leaves of "ieie", ferns and other brush? It is in amongst the roots of the bunch of ferns I am about to pick up. Aha! it is a next. Sure enough! I pick it out entire, and turn to the native and inquire, "Iori?" (Rat.) "Eh, iori", he says. "Aita iori", say I, "Meho!" Then I ask him where he found it. He points to a slight depression which might have been scratched so, but appears natural. I search about carefully for sign of Meho as evidence that this is her nest. Evidence! There lie three freckled eggs almost as large as a dove's. Evidence! Oh Meho maitai! What a find is this! Here is a bird supposed to have become extinct, and I have found its nest and three eggs. I am almost as elated as I was when I stumbled upon the young Porzana tahitiensis last December. Well, I certainly gave the native the ha ha, for had he seen the nest and eggs I would be obliged to pay him one hundred francs I offered as a prize to keep his eyes open.

The nest is now wrapped and the eggs blown safely, save a slight chip on one, and packed away. I have two splendid runs for shooting and traps set at the nest site, and at three

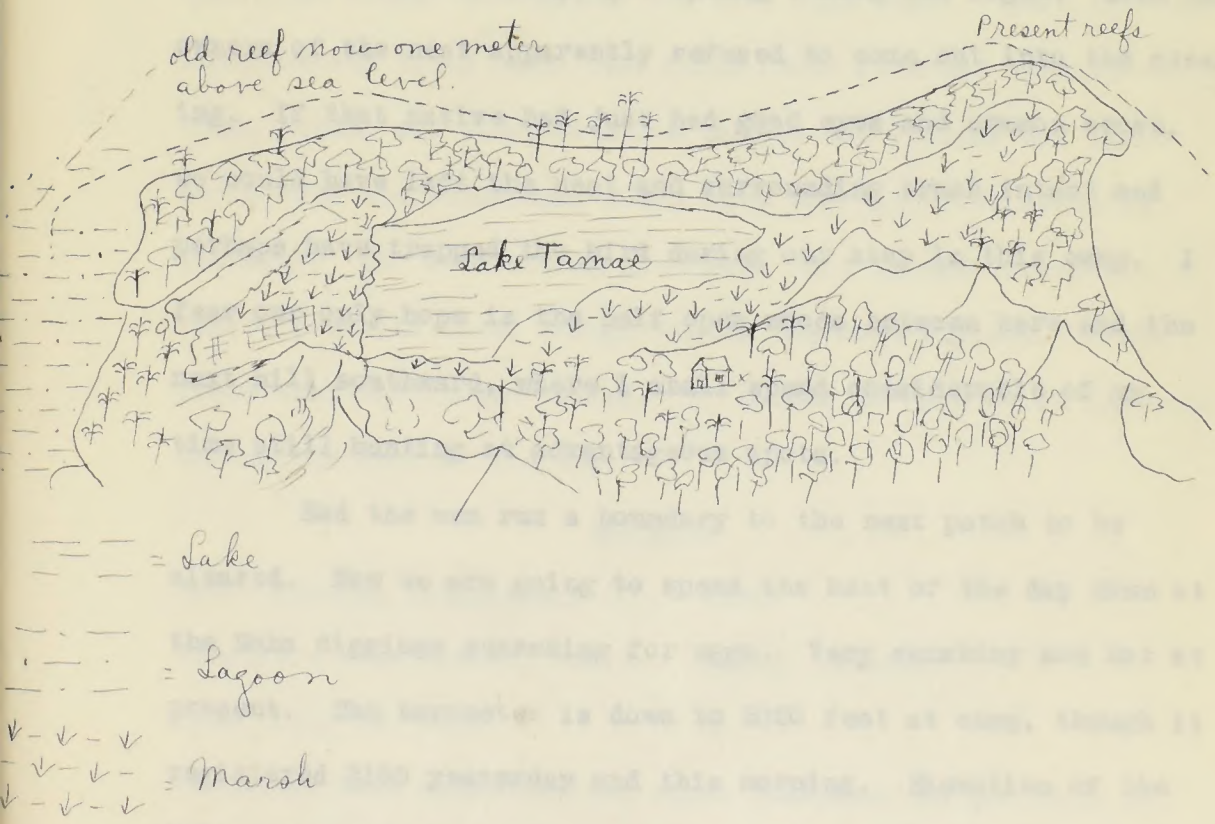
drank the bottle of water at lunch. The new man I set immediately to work digging our trenches through the brush, ready for the battle tomorrow morning. Had him clear a good, wide swath across the level top of the hill, while I set up the tent. Having pitched the shelter, I conceived the brilliant idea of an excess of ferns for a mattress. They were already cut, so I merely had to haul load after load to camp. Hell! What is this cluster of dry leaves of "lele", ferns and other brush? It is in amongst the roots of the bunch of ferns I am about to pick up. Aha! it is a nest. Sure enough! I pick it out entire, and turn to the native and inquire, "Lori?" (Rat.) "No, lori", he says. "Alia lori", say I, "Nabo!" Then I ask him where he found it. He points to a slight depression which might have been scratched so, but appears natural. I search about carefully for sign of Nabo as evidence that this is her nest. Evidence! There lie three freckled eggs almost as large as a dove's. - Evidence! Oh Nabo mailai! What a find is this! Here is a bird supposed to have become extinct, and I have found its nest and three eggs. I am almost as elated as I was when I stumbled upon the young Poreana tabitiensis last December. Well, I certainly gave the native the lie, for had he seen the nest and eggs I would be obliged to pay him one hundred francs I offered as a prize to keep his eyes open.

The nest is now wrapped and the eggs blown safely. save a slight chip on one, and packed away. I have two splendid runs for shooting and traps set at the nest site, and at three

suspicious looking openings in the brush.

One trap sprung twice before dark, but I fear it was the trap's fault. Meho called from the brush near our clearing, however. Noha was four minutes before seven this evening, and two or three have called since then. Rao sounds from direction of Monaputu. No sounds from Marepa rocks. All is in readiness for a pitched battle with Meho in the morning.

The following sketch is another view of Lake Tamae and adjoining marshes, showing that it is a land-locked lagoon. In my opinion the land-lock was formed more by wave-washed beach than by stream deposits of soil.



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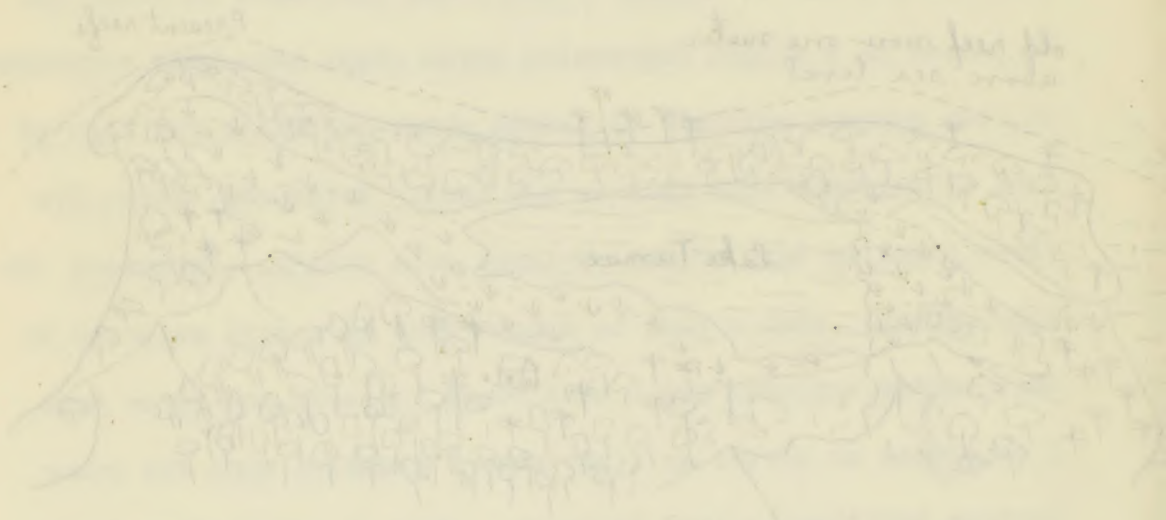
The following sketch is another view of Lake Tanna and adjoining marshes, showing that it is a land-locked lagoon. In my opinion the land-lock was formed more by wave-washed beach than by stream deposits of soil.



July 30

Shearwaters called throughout the night. Once, one came so close that I got up. When I whistled it flew overhead and was quite discernible. It repeated the performance a second time, but after I loaded the gun it refused to come near. On a moonlight night one could shoot them, I believe. During the full moon I should have tried for Rao from the cave west of Cook's bay. It was rather disconcerting this morning to not hear Meho calling in the ferns we intended to surround. Just before we went to work, one called below. We went farther down, hoping to drive one into our strategic patch of ferns, but failed in the attempt.

Nor did our traps get sprung during the night. Even the owners of the nest apparently refused to come out into the clearing. If that native had just had good eyes and common sense, we could have left the nest and surrounding brush intact and perhaps have trapped the bird during our stay in this camp. I fear our only hope is the half open woods between here and the next hill southward, where I shall spend considerable of my time still hunting at advantageous spots.

Had the men run a boundary to the next patch to be cleared. Now we are going to spend the heat of the day down at the Noha diggings searching for eggs. Very sunshiny and hot at present. The barometer is down to 2050 feet at camp, though it registered 2100 yesterday and this morning. Elevation of the Noha colony of eight dug out Monday, 1950 feet, or so near 2000 that the daily variation of the barometer will account for the difference. Not many fresh signs evident; in fact, none. Nor

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Nor did our traps get sprung during the night. Even the owners of the nest apparently refused to come out into the clearing. If that native had just had good eye and common sense, we could have left the nest and surrounding brush intact and perhaps have trapped the bird during our stay in this camp. I fear our only hope is the half open woods between here and the next hill southward, where I shall spend considerable of my time still hunting at advantageous spots.

Had the men run a boundary to the next patch to be cleared. Now we are going to spend the best of the day down at the Moke diggings searching for eggs. Very sunshiny and hot at present. The barometer is down to 2080 feet at camp, though it registered 2100 yesterday and this morning. Elevation of the Moke colony of eight dug out Monday, 1980 feet, or so near 2000 that the daily variation of the barometer will account for the difference. Not many fresh signs evident; in fact, none. Nor

could we find any more burrows on this ridge after searching till noon. The assistant brush cutter is returning to Temae, and will bring us a supply of food Tuesday. The guide is going for water and oranges this afternoon, while I return up this ridge and gulch to look for Meho wherever probable.

Intermittent fogs and sunshine. Brush was very thick everywhere along the ridge except just where the colony of shearwaters was found. For complete solitude there is no place better than one of these jungle-filled ravines. The only disturbances are a few buzzing flies and the occasional rustling of the "ieie" leaves by a gust of wind. Otherwise, perfect quietness reigns throughout the tree fern dell. There are few broad-leaved trees here, and still fewer flowers. Ferns,--tree, bush, brush, and vine,--various mosses and lichens and liverworts form the landscape, along with the "ieie" or climbing pandanus. The everlasting greenness that is characteristic of Tahiti prevails here, though Moorea has more exposed, barren rocks than the larger island. No sounds of rail to be expected during the heat of the day.

Egg Data

Name: Porzana tahitiensis (?). Meho.

Locality: Mona Tiarai, Moorea, Society Islands.

Date: July 29, 1921.

Identity: Nest found in fern brake inhabited by the rail, P. tahitiensis.

Nest: A cluster of dry leaves of twigs and fern fronds, loosely made amongst stalks of ferns in dense brake, resting in

could we find any more burrows on this ridge after searching till noon. The nearest fresh water is returning to Tenaru, and will bring us a supply of food Tuesday. The guide is going for water and arrange this afternoon, while I return up this ridge and guide to look for bano wherever probable.

Intermittent fogs and sunshine. Grass was very thick everywhere along the ridge except just where the colony of albatrosses was found. For complete solitude there is no place better than one of these jungle-filled ravines. The only disturbances are a few passing flies and the occasional rustling of the "tale" leaves by a gust of wind. Otherwise, perfect quietness reigns throughout the tree fern dell. There are few broad-leaved trees here, and still fewer flowers. Ferns,--tree, bush, grass, and vine,--various mosses and lichens and liverworts form the landscape, along with the "tale" or climbing pandanus. The everlasting greenness that is characteristic of Tahiti prevails here, though lichens has more exposed, barren rocks than the larger island. No sounds of rail to be expected during the heat of the day.

<u>Bird Data</u>

Name: <u>Porzana tabitiensis</u> (?). Bano.

Locality: Nuku Hiva, Moorea, Society Islands.

Date: July 25, 1921.

Identity: Nest found in fern brake inhabited by the rail, <u>P. tabitiensis</u>.

Nest: A cluster of dry leaves of twigs and fern fronds, loosely made amongst stems of ferns in dense brake, resting in

slight depression of mossy soil. Nest disturbed by native before seen by collector.

Collected by: Ernest H. Quayle.

Condition: Fresh.

A heavy shower in the evening, but the balloon silk was pitched at the proper angle and turned the water. We had a good wash, which was appreciated. Turned in early. Very few shearwaters heard, although they called occasionally when I was awake, especially towards three A. M.

July 31

The guide took the gun and went down after jungle fowl this morning at dawn. I slept in until he returned. He announced the approach of his brother, to whom I had made the request that he return today if there was mail for me. There were two letters, one from O'Reilly, and one from Mr. Beck. The latter announced the receipt of the shearwaters in good condition, but said boobies and terns were badly spoiled. A bag of supplies included a new pair of keds--sadly needed--and a fountain pen, a great improvement over the old one. A new pen point accompanies it too, which I hope will work in my Conklin. The improvement is decidedly noticeable. I am to continue for rail until week-end at least.

Hawks, seeing our rooster, came over us today, but always safely at a distance while we were prepared. One tempted two long shots from me, and the guide tried one. While we

slight depression or mossy soil. Nest disturbed by native before seen by collector.

Collected by: Ernest H. Quayle.

Condition: Fresh.

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July 21

The guide took the gun and went down after jungle fowl this morning at dawn. I slept in until he returned. He announced the approach of his brother, to whom I had made the request that he return today if there was mail for me. There were two letters, one from O'Neill, and one from Mr. Beck. The latter announced the receipt of the absurwaters in good condition, but said bootles and terns were badly spoiled. A bag of supplies included a new pair of kede--sadly needed--and a fountain pen, a great improvement over the old one. A new pen point accompanies it too, which I hope will work in my Conklin. The improvement is decidedly noticeable. I am to continue for rail until week-end at least.

Hawks, nesting our roaster, came over us today, but always safely at a distance while we were prepared. One tempted two long shots from me, and the guide tried one. While we

lunched, or rather dined upon fei in addition to our usual canned good, one flew over camp very low down and within good gunshot. But the guide had unloaded the gun, unknown to me, and the bird got beyond reach before I could get a shot at him. He apparently was following the ridge in the fog and did not see the tent until above it. Meho calls from brush south of tent, but there is no chance to see him in there. Noha commenced at 6:12 this evening. The guide is to go nest hunting tomorrow for the red-rumped weaver birds' nests.

August 1

Rained at intervals throughout the night. Noha called as usual. Rained this morning until 8:30 very heavily. When it showed signs of clearing we ate breakfast and went to work. The native went off nest hunting and for oranges, while I am going to invade the Meho region south of camp, the nearest thing to a plateau I have yet seen in Morea. Still hunting alone seems to present possibilities of rail. Went out during the lull after the morning rain, which lasted two hours, but heard nothing of rail. Remained under a moss-banked stump for an hour during a heavy shower. It was too rainy even for rail, so I returned to camp and did a little necessary sewing. It is useless to hunt birds during a storm, and unnecessary exposure.

Our commissariat arrived at one o'clock after a difficult journey along the slippery, wet trail. He brought a good supply of grub, mostly beef. It took four hours to make the journey which requires less than two hours in dry weather. I will use

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him tomorrow in another attempt to surround the rail and force the seclusive little bird into the open. This time we'll wait until we hear a victim before we start cutting brush. The rain continued very heavily all afternoon. Guide returned without nests, but brought a bundle of fei leaves which supplied a good wall south of our shelter. After the storm ceased, about seven o'clock, a heavy wind came up. I find the ridge pole has worn the tent in two places.

August 2

A beautifully clear morning which promises a day or so of good hunting. Hawks are already flying about in apparent delight, screaming. Chanticleer has finished his morning crowing. Not a sound of rail yet heard.

About 8:30, however, we heard one or two in the ravine head north of this hill. We approached and listened until we located one on a sidehill. We then tried our surrounding brush clearing tactics. They failed to reveal the rail, however, so I have sent the men to set out more traps south of camp where rail have been heard at times.

Our rooster is certainly domestic. He is especially fond of human company. It is rather interesting to watch him following us about like a dog. "Haere mai" and start off, if you're alone with him, and he follows at your heels. The rains drove him from his little alcove under some bushes beneath the edge of our tent. The native pets him, saying "Toto" (sleep), and the rooster settles down at the desired spot for the night.

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In the morning his overhead crowing is as startling as an alarm clock. It is also an intermittent one, and always wakes one at the proper time of day. The native has some sport at times by thrusting his long, black-haired head out from beneath the blankets towards the rooster. The latter is very game, and immediately gets upon his fighting toes. Nor is it a gentle amusement, for he claps those formidable spurs viciously against the retreated head beneath the blankets. Then he watches, and when the hair again appears he picks savagely at it. I wish someone had observed the chickens in the neighborhood when hawks were first liberated at Tahiti. The chickens had been here since native immigration. Had they retained their instinctive fear of flying enemies? This fellow certainly has it! Whenever the hawks approach closely, he clucks his danger call, and if they're too close, he darts madly into the nearest brush. The above domestic familiarity of the rooster is especially striking when his brothers in the jungle are so very wary and difficult to approach.

Hawks are unusually numerous this morning, at least three or four being in this vicinity. They seem to spend most of their time playing about in the air instead of hunting, so it is very likely they get ample food.

The solution of the strange calls heard at Vaihiria and in these hills is very probably the rail giving vent to his jubilant spirits in another tone. I have not yet heard them whimper here as they did at Rapa. Yet at times they approach that note. I am at a loss as to how they might be seen for shooting or otherwise be caught. They evidently didn't care for our crushed snails.

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They didn't come out into the open where the nest used to be. The brush is so open along the ground that trails cannot be located. Three of us do not appear to be enough to surround them effectively.

Teturoa can be plainly seen off to the north-northeast, an atoll monopolized by one man who has the concession from the French Government. Off to the west-northwest, some peaks are faintly visible, no doubt the Leaward Islands, Borobaro and Raiatea. The ocean is rippled, but otherwise quite calm, and a rich, cobalt blue in color. Such a contrast to the muddy olive green of Lake Temae and the opalescent, shallow lagoon! A glorious mass of glittering, white clouds seems to rest upon Tahiti's summit. Clouds at the same altitude off towards the horizons seem bent on assembling about Orehena to help that mass gouge deeper Tahiti's canyons.

The hawks were hanging around the second and third knolls down the Marepa ridge, so I came down here to make a try for them. Made a long try and failed. No more hawks seen. A light shower came up.

Meho quit calling, but I sat an hour or two in the ravine south, hoping against hope to see one. Have spotted a new patch of fern brake which will at least be workable. Move camp there tomorrow. The native came down and we went on down trail to Mr. Beck's Noha diggings. Altitude 2025 feet. The holes were below summit of ridge in black dirt, and decomposing, friable lava that was rather crystalline.

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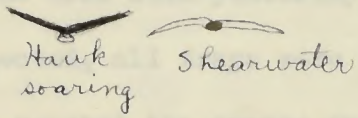
Alas! I can no longer say Noha flies only at night, for just now we saw one circling perhaps more than a dozen times about the ridge southwest of camp. There is quite a ravine heads there with shoulders of about the proper angle for Noha aeronautics. Down toward the lower end of the shoulder stands a magnificent, soaring bird this shearwater is! How I regret that they fly so much by night! We miss seeing some fascinating flights.



Hearing the rooster crow somewhat down valley, the guide went after him. I stopped on the narrow ridge at the head of the ravine where we attempted to surround the bird this morning. Just before sundown I saw the ferns move suspiciously, so fired blank at their base. Got nothing. Later, I tried two shots at the sound the sassy, little cusses made over the bank from me. I then climbed down (ferns hid from view the cliff just below), but could find no injured bird where I had shot. The rough character of the place would have sufficiently shielded him had my aim been correct. Roots, vines, dead fern fronds, moss banks,- all these contrive to make an intricate maze of dampness suitable to the habitat of the rail.

From Marepa canyon again this evening came a great chorus of myna bird vesper chants. The natives say that the islands visible of the leeward group are Maiia and Huahini. They have been very distinct all day.

There were few Noha calls heard tonight, one reason being a sound sleep. The Rao calls were faint this evening, although

Alas! I can no longer say Noba flies only at night, for just now we saw one circling perhaps more than a dozen times about the ridge southwest of camp. There is quite a raving beauty there with shoulders of about the proper angle for Noba aeronautics. Down toward the lower end of the shoulder stands a magnificent, soaring bird this sheerwater is! How I regret that they fly so much by night! We miss seeing some fascinating flights.

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There were few Noba calls heard tonight, one reason being a sound sleep. The Eao calls were faint this evening, although

children's voices came up from Marepo valley very plainly.

August 3

Rao heard just before daylight quite plainly. Hawks playing about as usual. No sounds of rail this morning. Have set the brush cutter making a trail down the ridge to our new camp site while we go over the new trap line and down to the orange tree near the Noha seen yesterday.

As was expected, all traps were birdless. It became quite rocky ere we reached the orange tree, a magnificent tree with at least a hundred dozen oranges on it. The trunk is forty inches in circumference, yet not a sign of young trees growing up in its vicinity. What agency carried the seed here that grew into this lone specimen of fruitfulness? This ravine head is cool and camp, but coming down we heard no sound of rail or other birds. We found the Noha hole a little below the orange tree on the next shoulder of the ridge. Elevation 2000 feet. How closely they maintain that lower altitude limit! The hole had two branches, one penetrating the hillside of red soil, recently decomposed from a pumice-like lava, two full meters. The other ran alongside the ridge near the surface. Two side shafts saving work digging it revealed a nest just lined, but a runway beyond it one meter and blind. No birds nor eggs. Left both holes in a habitable condition, if the birds are no more particular than others have been.

No longer can I doubt or discredit the story of the natives catching jungle fowl by a fighting cock to which a piece

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No longer can I doubt or discredit the story of the native catching jungle fowl by a lighting cook to which a piece

of fishing cord is attached. We were at lunch down on the ridge of fern brakes, whither we had just hauled camp and pitched the shelter, when one wild cock not far distant commenced to crow. Instantly the native Tihira dropped his food, drew from his pocket an unused handkerchief and a wad of fishing twine. Moa he took, and away he went up trail. We were close enough to hear the proceedings, crowing answering crowing, with now and then the native clucking like a hen. At last the crowing, which had been getting nearer and nearer the same spot, ceased and we heard a medley of wing beats. They were at it. We, too, crept cautiously up trail. From above I could see a flash of color once in awhile. Then there was the cackle of the wild cock as if he had seen some one and departed. But no! he had seen the native who was merely walking out to pick him up. The string was entwined around his two legs four times, and what with spurs terribly sharp and a good useful length he was hopelessly captured by the twine which was one of two free pieces some two meters long following loosely behind our Moa. So now the story is complete, for I have the specimen and will label it as so caught, # 1371.

Our fern brake ridge is a dandy, and once again my hopes for rail are running rampant. The brush cutter found an old nest along the trail he cut down here. It was very like the other, if anything composed more of "ieie" leaves than anything else. It, too, was on the ground and in the fern brake. For at least two days now I'll keep these men busy cutting ferns, and perhaps we'll find another nest. Started the brush cutting

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by clearing a baseline for attacking tomorrow. Got a distant shot at a hawk while at work. At four o'clock, at least two rail notified us of their presence in the brush, where we hope to surround them.

I went back of camp and skinned out the jungle fowl, which is a beautiful, red-backed fellow with wings a light chocolate. The brush cutter brought in another old nest, like the others in all respects, being composed of the "ieie" leaves placed in circular form. It is rather damp resting upon the ground.

August 4

That the string and fighting cock is a success was doubly proved this morning when at sunrise the guide returned from the fei bed below with another victim of that method. This fellow is a young one with but little color above, except the neck feathers. The native came in carrying the wild bird with the tame rooster crowing victory along the route behind his master's heels. The jungle fowl is now straining at his tether, vainly trying to escape; the tame one is straining his, trying to reach and finish the wild one.

We blocked out a large triangle at the head of a ravine, and have fired one side of it. After we had started the fire, I feared for the safety of the camp beyond to cleared runways, some hundred yards. Although the fire burned with a fury, its progress was very slow, and there was no tendency to jump the one meter gap cut-out, up alongside of which it traveled. Except where we had

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piled brush and a draft had access to the roots, the fire merely skimmed over the upper part of the brush, above the moist under part. From the other side the native is now sending fire in small bits to complete the clearing of the triangle. It was too great a task to try to clear the whole patch, though I fear this burning is likely to destroy any nests, unless, perchance, the moisture underneath where they are will save them. The present blaze will clip the tip off the triangle. The fire from the windward side skimmed over without disturbing anything. I am inclined to believe the firing ineffectual. Save for the crackling noise, I hardly believe the birds beneath would be aware of its existence. I think they are perfectly safe down in the dead, damp leaves a foot or so above ground. The native is now trying a fire from the center of the base of the triangle. It may do something. The brush cutter struck for water. He refuses to substitute oranges. We have a one quart bottle, and I seldom get a swig of it. He drinks a pint at a toss. Rather a shiftless, typical native. The older fellow, his brother, is quite the opposite.

So when the burning of brush failed to drive the rail from his refuge, I decided that the results were not worth continuing the expensive campaign. Struck camp and retreated ignominiously. It was interesting to see the tame rooster follow down the trail all up in the air and ready to fly at the wild one. We let him walk to the ironwood tree, but I carried him from there.

During the collecting of jungle fowl (since there are no more valuable birds to write about), I have noticed a marked characteristic individuality in the comb. Although I would not

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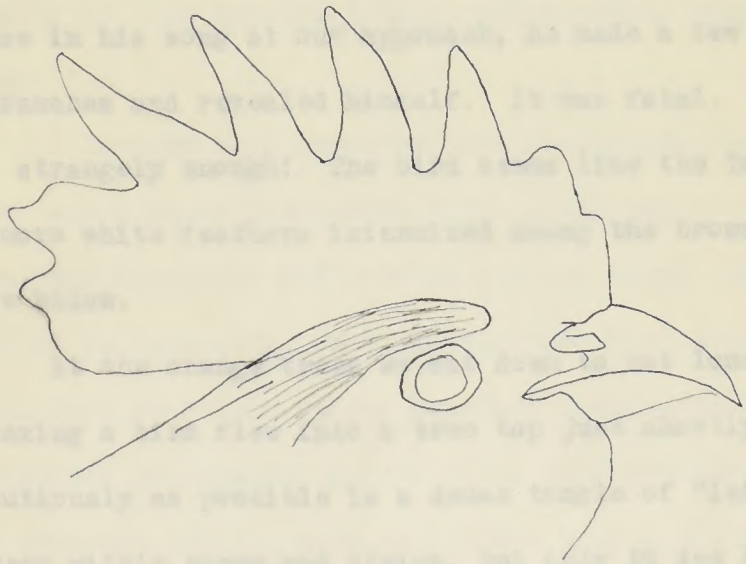
go so far as to say that the birds have developed a species, for it is well known amongst the natives that they inter-breed with the domestic stock, still the comb is more slender and the posterior end is decidedly not forked. Four or five prongs seem to be the average. The Matea red cock is very similar to this last one caught, but the colors of the upper parts are far less brilliant. Noticing how decidedly the combs of the Matea birds had shriveled up, I decided to copy the following to give some idea as to the shape of the banner that makes the bird. It is traced as carefully as possible and has the general appearance of the wild fowl comb, which varies from the average tame bird's about as much as the crowing does.

Typical comb of the Moorea Jungle Fowl.



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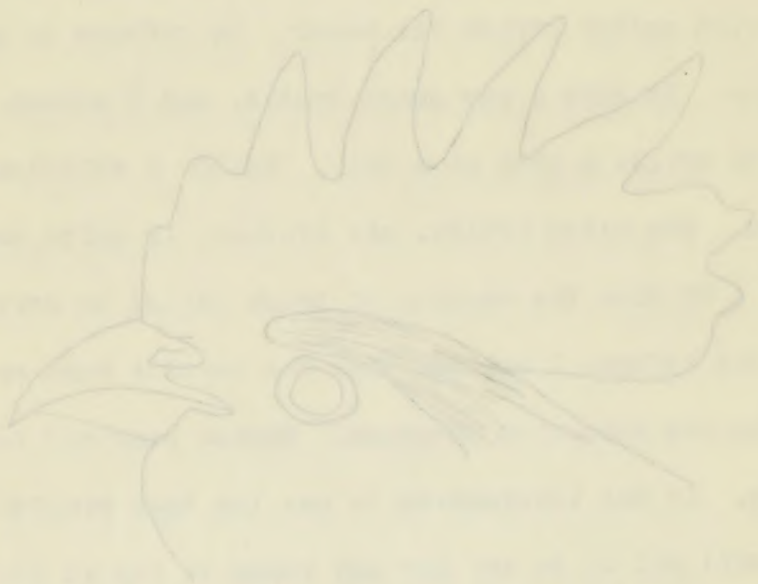
Typical comb of the Moores Jungle Fowl.



August 5

Took cart and horse this morning and drove around to V. S. Tannen, where I failed to kill two warblers one afternoon

when returning from the Hapiti excursion. It took an hour to make the journey. Saw some gygis terns and one yellow bill along the shore. My former guide was just returning from his successful morning's fishing. He had the twenty-inch, iron point of the spear covered with them. We hiked right along up the trail, not stopping until well inland and at an elevation of six hundred feet. Orange trees and hibiscus were abundant, but no sounds of warblers there.

Seeing three kingfishers in a tall tree, I decided not to go home gameless, so shot two of them. One we could not find. Proceeded up trail with nothing happening until almost at the orange trees where I had missed the warblers formerly. Then we heard one singing. Cautiously we approached the trees whence the sound came. Fortunately, he was in a good tall tree. After a pause in his song at our approach, he made a few hops amongst the branches and revealed himself. It was fatal. My aim was good, strangely enough! The bird seems like the Tahiti one, but with more white feathers intermixed among the brown ones; quite yellow below.

At the orange trees we sat down to eat lunch, but at my coaxing a bird flew into a tree top just shortly up ridge. As cautiously as possible in a dense tangle of "ieie" we tried to creep within range and vision, but only to see him move to another tree. We followed that one bird fully an hour; then returned to our neglected lunch. Ate half of it, but while refreshing on an orange I sucked loudly. The warbler came to

when returning from the night excursion. It took an hour to make the journey. Saw some pretty terns and one yellow bill along the shore. My former guide was just returning from his unsuccessful morning's fishing. He had the twenty-inch, iron point of the spear covered with them. We hiked right along up the trail, not stopping until well inland and at an elevation of six hundred feet. Orange trees and hibiscus were abundant, but no sounds of warblers there.

Seeing three kingfishers in a tall tree, I decided not to go home gameless, so shot two of them. One we could not find. Proceeded up trail with nothing happening until almost at the orange trees where I had missed the warblers formerly. Then we heard one singing. Cautiously we approached the trees whence the sound came. Fortunately, he was in a good tall tree. After a pause in his song at our approach, he made a few hops amongst the branches and revealed himself. It was Yellow. My aim was good, strangely enough! The bird seems like the Yellow one, but with more white feathers interwoven among the brown ones; quite yellow below.

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a tall tree, this time below the oranges but beyond range. Again we crept up. Did not see him depart, but when he failed to show up after patiently waiting at length I fired an auxiliary with no result. These two birds were found at an elevation of eight hundred feet. We ranged for three hours about the face of the canyon from 800 to 1050 feet, but heard only one more bird and that departed unceremoniously at our attempt to approach.

At last we started down trail, but the native deflected our course through some fei groves. While he was searching for some ripe fei I sucked the back of my hand (I kept it quite clean today, in fact) and saw a noiseless warbler in the tree overhead. Again my aim was true. The bird fell by # 10 shot, large shell, the auxiliary not having been tried except at an over-bold dove while we were lunching. Two months ago the doves were cooing profusely in this valley; today I could easily count them on my fingers.

I left my tipi where we shot the kingfishers. We returned for it, and I found the second bird. Only one or two ants were on him, but fly-blows had hatched and one maggot was fully an eighth of an inch long. How rapidly they must develop, or did it come from something on the ground? Cleaned the blown bill and nostrils and wrapped up the bird. Led the native a merry chase down the trail. With good shoes that would not slip I could keep most of these fellows hopping downhill, especially when they have a good, heavy load of fei, and I have nothing.

While he hitched up my horse, I walked over to the beach to pick up an August record of the wandering tatler.

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At last we started down trail, but the native deflected our course through some fat groves. While he was searching for some ripe fat I smoked the back of my hand (I kept it quite clean today, in fact) and saw a mutineous warbler in the tree overhead. Again my aim was true. The bird fell by a 10 shot, large shell, the auxiliary not having been tried except at an over-bold dove while we were lunching. Two months ago the doves were cooing profusely in this valley; today I could easily count them on my fingers.

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While he hitched up my horse, I walked over to the beach to pick up an August record of the wandering tattler.

Played the real sport and refused a pot shot at two. Raised them and fired at one, but winged them both, much to the delight of watching natives. So the day was not birdless, and what's more, those two warblers are the only ones we got in two months. Beck did not see any. I saw two at Afareaitu, and three here before, missing two with weak auxiliary cartridges. The present box of auxiliaries seems alright.

August 6

Spent the morning working on birds and packing up, lest the boat come and immediately return to Papeete; but it did not. So I had the afternoon free to take more pains on the birds and to sew up clothes.

Moorea has been more of an opportunity to learn about natives and their inner character. Of course, the influence of the viewpoint has been considerable. We stopped with a man who has spent ten years amongst them, doing business. The business man's opinion of the native is entirely opposite to the transient, literary man's opinion. At Moorea we had business dealings with natives. We found them very deceptive, very false, very indolent, very ungrateful, and decidedly low, coarse, and even bestial in morality. If immorality were not connected with a wide-spreading of terrible diseases, it would not be quite so bad from a biological point of view, except that childbirth is often annihilated, as in the Marquesas, by profligacy. Yet in the West Indies and some of these islands, children are very abundant. The morals of the natives appear to me to be about

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where they were during the Aeori days, the few changes being no more strangling of children and no human sacrifices or cannibalism,--all reforms of the age in spite of religion.

August 7

Spent the day writing family letters.

August 8

Crossing to Tahiti, I saw seven or eight of the Rao (Puffinus obscures) shearwater in one flock. Off boat a ways was a large flock of more than fifty boobies, noddy terns, and yellow bills. Accomplished nothing except to get located. Found the steamer due tomorrow, so set to work on my three month's mail in an attempt to get it off at last. Mr. Beck has not yet reached conclusions about a schooner.

August 9

Spent the day on letters, and the evening visiting with the Yerex family. A mother of girls from fifteen to twenty-two has a task indeed, trying to do all that can and should be done for their advantage. How much less homesick I always am after a good visit with that dear lady, and just seeing and talking a little, or dancing and singing with real girls! The Anglo-Saxons certainly have women folks of whom to be most justly proud.

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August 10

Another day of attention to mail.

August 11

Settled accounts with Mr. Beck and packed up personal junk, which is getting badly scattered about the hotel for lack of good trunks or boxes. Spent day getting ready for journey tomorrow.

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Another day of attention to mail.

August 11

Settled accounts with Mr. Ecok and packed up personal junk, which is getting badly scattered about the hotel for lack of good trunks or boxes. Spent day getting ready for journey tomorrow.

Bird Collection

Moorea.

1921			Sex Organs
July 25:	1365 ♂	Pt. neglecta, Noha.	Small.
	1366 ♀	" " "	Small and indistinct.
	1367 ♀	" " "	One egg two mm. Commenced swelling.
	1368 ♀	" " "	" "
	1369 ♂	" " "	Small.
July 26:	1370 ♂	Jungle fowl	Breeding, large.
Aug. 3:	1371 ♂	" "	" "
" 5	1372 ♂	Warbler	Caught fighting. Small.
	1373 ♀	"	(?)
	1374 ♂	Kingfisher	Small.
	1375 ♂	"	"
	1376 ♂	Dove	Breeding.
	1377 ♀	Tatler	Eggs distinct.
	1378 ♀	"	

Bird Collection

Nogres.

1921					Sex Organs
July 28:	1368	♂	Pt. magicola.	Toma.	Small.
	1369	♀	"	"	Small and inactive. One egg two mm.
	1367	♀	"	"	Commenced swelling.
	1368	♀	"	"	" "
	1369	♂	"	"	Small.
July 28:	1370	♂	Jungle fowl		Breeding, large.
Aug. 3:	1371	♂	"	"	" "
" 5	1372	♂	Warbler		Caught fighting. Small.
	1373	♀	"		(?)
	1374	♂	Minnetaber		Small.
	1375	♂	"		"
	1376	♂	Dove		Breeding.
	1377	♀	Tailor		Eggs distinct.
	1378	♀	"		

BOOK XVIII.

Tahiti.

Papeari, Taravau, Utuafai,
Mahateao, Tefaa-rahi, Tefaa-iti,
Tautira, Aiurua, Cave, Mona Aarai.

August 12--September 23, 1921.

August 12

Mr. Beck and I took stage for Taravau but stopped at Papeari with Frisbee. Mr. Beck ascended River Vaiite while I went on to River Vaima. Warblers were very plentiful in both places in bamboo thickets. I ascended to forks of the stream. Picked up a swallow and green heron returning. Saw two swallow nests below leaning tree above river. No eggs.

August 13

I went on to river not named on map and ascended to limit of travel, where a gorge and deep pool stopped me. Two green herons and one cuckoo were all the birds seen. In the evening Frisbee and I tried fishing by moonlight but had no success. Storm threatening.

BOOK XVIII.

Tahiti.

Papeari, Taravao, Utuafei,
Mahetoro, Tofae-rahi, Tofae-iti,
Tautira, Aluroa, Oave, Hona Aarai.

August 12--September 23, 1921.

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Mr. Book and I took stage for Taravao but stopped at Papeari with friches. Mr. Book ascended River Vaite while I went on to River Vaima. Warblers were very plentiful in both places in bamboo thickets. I ascended to forks of the stream. Flushed up a swallow and green heron returning. Saw two swallow nests below leaning tree above river. No eggs.

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August 14

Spent the day reading Melville's "Typee". Went canoe sailing with Frisbee.

August 15

Heavy sea here and heavy rain in mountains last night. South wind "Marama" brought the storm. Anticipated Mr. Beck's desire to take stage, so was all ready and waiting. Too bad the storm prevented our proposed crossing of the mountains from Papeari to Hitiaa! We put up with Steven Vivish. I went out in canoe and got a yellow-billed tern and reef heron. In reaching for the tern I leaned opposite the outrigger and capsized the canoe. Landed in some sharp coral and cut one foot rather badly, especially above the fourth toe. One long, superficial scratch, more than two thirds the length of my sole, fortunately did not get through the hide.

Spent the evening listening for rail about marsh, with no results. The house we put up in is, or was, the property of a German, now confiscated by the French. His library is very interesting.

August 16

Steven drove us towards Hitiaa. We met an old native who told us the Rupi lived in his valley. Two young lads carried our cumbersome equipment up to the forks of the stream Utuafai. The afternoon and next morning revealed nothing, although fei were plentiful. We heard doves, kingfishers and warblers.

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August 17

Broke camp at noon and proceeded on to Hitiaa. Picked up a green heron as we left Utuafai valley. Natives are very emphatic in their claims for Rupi being present here at Hitiaa.

August 18

Mr. Beck worked towards Mahaena while I covered three small streams and ravines behind the village of Hitiaa, and finally followed up River Mahateao to the forks just below two waterfall pockets. The only fact worthy of note was a pair of green doves carrying nest straws. Obtained a green heron. Saw a few swallows. Kingfishers plentiful. Myna abumdant. Reef herons in pairs up the river.

August 19

Mr. Beck and I, with as light packs as possible, proceeded to Mahaena and followed up River Tefaa-rahi to where it makes an abrupt and considerable right-angled turn to the right. There we pitched camp. Mr. Beck went on up stream; I assailed the ridge opposite camp, hoping to reach a fei bed far up on canyon wall. At four o'clock I had climbed to an elevation of eight hundred feet, less than half way to the fei. Gave up and returned down trail. But camp was far from the river to aid hearing, so I dropped (literally) into the ravine beside the ridge to get a bamboo cane to carry water to camp in. The large cane I had cut, and was trimming a small one with which to knock out the sections when I heard the cooing for which we have

August 17

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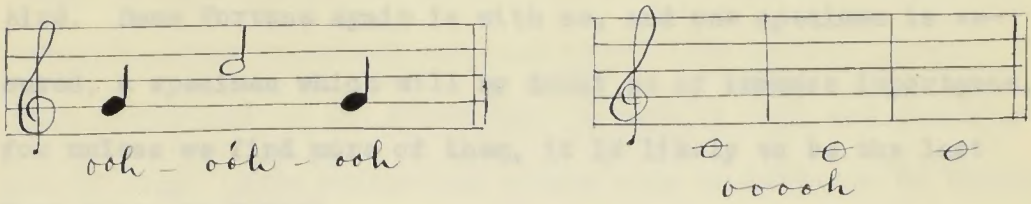
listened eleven months. Only the huntsman and the scientific collector above mere sportsmen can appreciate the thrill of the sound of game long sought in vain.



The call is quite easily distinguished from the long cooing of the green dove. Three or four times this was repeated; then came a distinctly different note, low-toned, long-noted, but not very loud. Then came a pause which is much more than a full rest, yes, fully three full measures; then a repetition of the long call. For five or ten minutes we sang together on that note. Then once Rupi got impatient and spoke up in his first voice,--three distinct calls. He was in a tree up canyon from me at first. He flew to a tree even with me, but rather high up the slope and out of sight and range. I attempted to approach within range. The slope is steep and brushy; a rock slips out from beneath my feet and I slide down a meter or two, breaking some dry sticks. Rupi takes wing. Curses! Is he gone? No, he is again calling, but now from across the canyon. Still I am unable to see him. Again comes that impatient first note, and then the loud flap of pigeon wings beginning flight. Now he is perched below the bamboo, cooing. I put all the powers of entreaty I possess into my cooing. Ah! he alights in the tree overhead, but still out of sight. Cautiously I shift for a better view. There is a large branch four inches in

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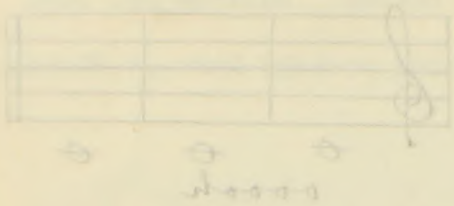

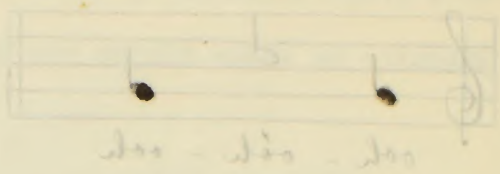

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diameter, and there a tail and abdomen of a large, blue pigeon. Bang! Thud! Oh boy, ain't it a grand and glorious feeling! For eleven months, off and on, we have endeavored to find this bird. Dame Fortune again is with me, and one specimen is secured, a specimen which will no doubt be of immense importance, for unless we find more of them, it is likely to be the last Rupi taken in Tahiti.

The hawks have been here about thirty years. Twenty years ago this pigeon was very plentiful; now there are very few of them to be found. What chance has a large pigeon, perched in the basin of a plantain's spread of leaves, when an unfamiliar enemy falls like a bolt of lightning out of a clear sky upon it? The law of geometrical, proportionate increase, based on the introduction of a pair of hawks twenty-four years ago, after allowing for the fact that the young birds mature at two years and that no birds have died, gives one the astonishing result of 2349 birds in that time. It would not be against nature for a hawk to live that long, but, for the sake of argument, let us consider that the increase has offset deaths only in twenty per cent. of this theoretical case. That leaves us 117 birds, 27 for Moorea and 90 for Tahiti. If each bird catches ten pigeons a year the pigeon would soon diminish. Let us hope that now the Rupi is nearly extinct, and soon will be so, that the green doves can evade pursuit, and that the hawks will have to live upon rats caught while eating fei. There would be some consolation in that. But certainly the Tahitian woods have lost a very charming inhabitant in the Rupi.

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August 20

I spent the day until 2:30 in the two ravines opposite camp, calling incessantly for Rupi without success. A pair of doves followed me around and came very close several times. Rain threatened in the afternoon. I went to camp and cooked a pot of rice. Made coffee and cooked soup in sections of bamboo. Was skinning Rupi when Mr. Beck arrived and we decided to eat hurriedly and strike for Hitiaa to avoid the threatening rain. He lost his watch, and I my notebook during the day. We made the road well before dark.

August 21

After cleaning and oiling the guns I spent the entire day reading Dumas' "Count of Monte Cristo". The calf got loose today and deprived us of the delicious, fresh cow's milk that we have been drinking. A group of natives tried in vain to catch it until late in the night, when they succeeded.

August 22

The weather being good this morning, we decided to make another attempt for pigeons. Made up light packs and proceeded to Mahaena, thence ascending River Tefaa-iti. Made camp low down. Mr. Beck proceeded up main valley. After stretching shelter I followed up ravine to the right, which proved to be a small gorge with a twenty foot waterfall at its head and no roots to help me out of the cul-de-sac. There has been a very recent cave-in of the wall just below the falls, which

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fills the narrow gorge fifteen feet deep. Ferns are but an inch or two in height upon it. Just before we stopped to camp, I shot a black-throated kingfisher and a light-capped dove which failed to keep beyond auxiliary range. Both were young birds, we believe. Dove's cooing in neighborhood of camp. Calls unanswered by pigeons.

Returned down stream until able to leave gorge. Opposite the ridge above the same I found something resembling a trail. It ascended very abruptly part of the time up a small wash, and part of the time up the ridge shoulder. Vegetation is ideal for pigeons, tall trees interspersed amongst the fei beds, with, of course, ferns and brush besides. I called at length while ascending. Came to a stop at the base of a cliff 750 feet elevation. Called here for half an hour. Saw either a dove or pigeon (and it looked too large for the dove) fly past, but overhead foliage was too thick for a good, identifying view. Cleared a space of ferns below the cliff so I could look out over the valley below. Saw a pair of green doves flying across canyon upstream opposite two solitary cocopalms. Then I saw a bird too large for a dove fly down canyon beyond the range of my vision. Might have been a pigeon. He was low down in the valley and paid no attention to my calling.

Fei are plentiful on the sides of the canyon in nearly every pocket or ravine. There is a fig of a rich vermilion color that is now ripe, the fruit being about the size of my thumb. A very common, tall tree has a choke-cherry-like fruit which is very thick all over the ground beneath the tree. Have

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not found a fruit with seeds like those in the Rupi's gizzard. Myna and kingfishers are quite numerous and noisy.

Descended trail and at the foot of it I cut bamboo water barrel and coffee pot. Proceeding down stream, I decided I had passed camp once when I followed stream bed instead of trail. Was returning when I met Mr. Beck. He was fortunate in finding a white reef heron up the river.

August 23

After coffee Mr. Beck stopped to skin three birds. I washed up dishes and put rice to soak. Also hauled a cane of water. Then a native came along on his way after fei. I left with him and kept up until the trail became obliterated at some lime trees. Here he took to the stream bed, informing me that he was going "mearoa" for fei, as if he didn't care to be tagged. I bade him farewell. On the east of the river, opposite the lime tree, I found a trail ascending the mountain, so took it. At an elevation of one thousand feet it follows alongside the slope through successive fei beds. Doves came while I was calling pigeons. Mynas and kingfishers were heard about. A hawk above.

The trail finally dwindled away but I was able to find my directions about the fei beds without it. Ate lunch at 1150 feet. Pigeon calling attracted a hawk overhead within range, but too much foliage for a successful shot, and so he escaped. Rain threatens. A tropic-bird sets out to sea down valley. I wonder if the hawks ever attempt to catch them.

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August 25

After coffee Mr. Beck stopped to skin three birds. I washed up dishes and put rice to soak. Also hauled a cane of water. Then a native came along on his way after fel. I left with him and kept up until the trail became obliterated at some lime trees. Here he took to the stream bed, informing me that he was going "mearce" for fel, as if he didn't care to be tagged. I bade him farewell. On the east of the river, opposite the lime tree, I found a trail ascending the mountain, so took it. At an elevation of one thousand feet it follows alongside the slope through successive fel beds. Doves came while I was calling pigeons. Hynas and Kingfishers were heard about. A hawk above.

The trail finally dwindled away but I was able to find my directions about the fel beds without it. Ate lunch at 1180 feet. Pigeon calling attracted a hawk overhead within range, but too much foliage for a successful shot, and so he escaped. Rain threatens. A tropic-bird sets out to see down valley. I wonder if the hawks ever attempt to catch them.

Farther down the trail where a dove had approached closely when I called as I was ascending, I again called at length. Two doves after listening to me for a while suddenly dove hurriedly down the slope through the tree tops. I was watching them when a shadow attracted my attention to a hawk now departing from directly above me. Too late for a shot! If the doves always perform in that manner they may be able to hold their own against this arch enemy. It may be that this hawk is not one that strikes on the wing.

Seeing nothing and hearing nothing, we returned to camp, Mr. Beck catching up to me while I called. Broke camp and returned to Hitiaa, where our host informed us that neighbors had seen the Rupi nearby. What a paradox!

August 24

This morning I came out with the native who had seen the pigeon last evening. Came to first small valley. Ascended it a ways and then took to side ridge. No sooner had we ascended it than we could hear the Rupi in canyon below. The male has a guttural treble, very like a domestic pigeon. There are a pair here in the vale where we now are. I missed one shot sitting and had the misfortune to pull another just as the bird flew. The native claims, and the presence of these birds indicates that they feed upon the vermilion colored fig, which is here plentiful. They have called since shooting, so I am hoping they will stick around until I can hit at least one of them. I should have used larger shot than tens and held better.

Further down the trail where a dove had approached closely when I called as I was ascending, I again called at length. Two doves after listening to me for a while suddenly dove hurriedly down the slope through the tree tops. I was watching them when a shadow attracted my attention to a hawk now departing from directly above me. Too late for a shot! If the doves always perform in that manner they may be able to hold their own against this arch enemy. It may be that this hawk is not one that strikes on the wing.

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When you have searched ten days for a bird and are almost ready to give up in despair; when the natives claim there are many about; when after a toilsome journey you hear one calling and scramble through impenetrable jungles to approach it; when you hear it overhead and for a long time cannot get to see it; when you have shot twice and missed it; when again you hold a gabfest of half an hour, and the bird flies toward you, lighting upon a branch so close that you would blow it into a thousand feathers; and then, when you risk all upon a small auxiliary cartridge aimed at its head and the bird departs on rapid wing, you take the last chance of a thousand and fire point blank through the foliage and the bird drops dead,--Oh boy! Ain't it a grand and glorious feeling!

Now for the other which has moved up canyon, and consequently will require more jungle scrambling. Indeed it was so. We followed him up canyon. Heard him overhead. Ascended one slope and heard him opposite in the tops of Maupi trees. Crossed canyon, but could not see him. After awhile I shot to scare him. He crossed canyon. We did likewise, and then followed him up hill through the jungle until he finally took wing and went below. We went on up into ferns so as to get a commanding view. Hearing two pigeons in the pocket forming ravine head, we went up the ridge and dropped down in there. Had reached stream bed and were descending it when we heard two and saw one pigeon up slope. Returned up there and got well within range. It came into the tree and placed for a good shot.

As it fell, another flew out of tree, circled, and

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As it fell, another flew out of tree, circled, and

came back. The second shot was farther than the first and only wounded the bird, which fluttered off down into the ravine, where, after much searching, we were unable to find it. Well, my only hope in that case is that it was not badly injured and will live. It seems terrible to kill and not find a bird that is so scarce. They seem rather quiet during the middle of the day. Well, these two remaining birds will get lonesome by tomorrow and perhaps will respond better to calling. But with two in my jacket I have no kick coming at all. We heard nothing more descending the valley. It seems that this is the valley Mr. Beck ascended first day here. The luck was apparently mine. Vaiopae is the stream where we heard and saw four Rupi.

After making up the two pigeons, at 4:20 with two boys I struck out for the islands in a canoe. Waves lapped the gunwales as we crossed the channel not very distant from where some waves were breaking terrifically over a coral rock. Yellow-billed terns flying along reef, and two perched on tree between two islands. These I got, and also another that came over as we were picking them up. The farther island is densely overgrown with pandanus, but supports a few ironwood and a few coconut trees. No bird lime was to be found there, so we returned to the nearer island. As we approached it at about dusk, a shearwater was seen circling at about two hundred feet above the island. It did not come down, however, and went off landward. We had no more than crossed the island when a frigate bird came up wind towards its perch on a dead ironwood tree. One shot broke its widely spreading wings and disturbed seven

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After making up the two pigeons, at 4:30 with two boys I struck out for the islands in a canoe. Waves lapped the gun-wales as we crossed the channel not very distant from where some waves were breaking terrifically over a coral rock. Yellow-billed terns flying along reef, and two perched on tree between two islands. These I got, and also another that came over as we were picking them up. The farther island is densely over-grown with pandanus, but supports a few ironwood and a few coco-nut trees. No bird time was to be found there, so we returned to the nearer island. As we approached it at about dusk, a sheearwater was seen circling at about two hundred feet above the island. It did not come down, however, and went off land-ward. We had no more than crossed the island when a frigate bird came up wind towards its perch on a dead ironwood tree. One shot broke its widely spreading wings and disturbed seven

reef herons nesting on limbs of the pandanus nearby. There were no signs of noddies nor boobies coming in to nest. After darkness settled down, we set sail for shore.

August 25

This morning Mr. Beck left for Papeete. I came back to the stream Vaiopae to search for more Rupi. No sooner had I entered the small ravine (the first on the left ascending the larger stream) than my calls were answered. From up canyon came the reply. I followed up a ways, then, to be better enabled to hear, climbed the side of the ravine. Calling a little longer was rewarded with flapping wings and there was Rupi perched on the limb of a tree across the ravine looking for me and cooing. For several minutes I coaxed, but he was adamant. So I decided to approach him. A sure long shot might have dropped the bird. Descending the gulch, I went up stream to a good opening commanding the tree, but I could not see my bird. "Ooh-ooh-ooh!" came a call from across the ravine whence I had just come. I hastened back, and there sat the pigeon on a tree stump above my former location. If I had only had patience! I approached a little nearer, then decided to try a long shot. I succeeded in dropping the bird. Hastening up the steep slope to the tree I searched in vain for it. Evidently it had been only wounded and had crawled away. What luck! In despair I sat down to bemoan my fate. Listen! Wasn't that the flutter of a bird's wings beating against brush? Yes indeed, and there was Rupi! After a short chase through the jungle I caught him. He was

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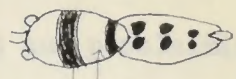
August 25

This morning Mr. Beck left for Rapopete. I came back to the stream Valopae to search for more Hugi. No sooner had I entered the small ravine (the first on the left ascending the larger stream) than my calls were answered. From up canyon came the reply. I followed up a ways, then, to be better enabled to hear, climbed the side of the ravine. Calling a little longer was rewarded with flapping wings and there was Hugi perched on the limb of a tree across the ravine looking for me and cooing. For several minutes I coaxed, but he was adamant. So I decided to approach him. A sure long shot might have dropped the bird. Descending the gulch, I went up stream to a good opening commanding the tree, but I could not see my bird. "Coh-coh-coh!" came a call from across the ravine whence I had just come. I hastened back, and there sat the pigeon on a tree stump above my former location. If I had only had patience! I approached a little nearer, then decided to try a long shot. I succeeded in dropping the bird. Hastening up the steep slope to the tree I searched in vain for it. Evidently it had been only wounded and had crawled away. What luck! In despair I sat down to bemoan my fate. Listen! Wasn't that the flutter of a bird's wings beating against brush? Yes indeed, and there was Hugi! After a short chase through the jungle I caught him. He was

apparently a young bird just out of juvenile plumage, with dark blue feathers giving his light blue parts a mottled expression. Nothing more is heard. Kingfishers uncommonly noisy. This morning at daylight, two green doves were flying amongst the tree tops about the house where we stop. The ridge I followed bore a faint trail which led me up to the head of the ravines on either side. All along I called, but heard nothing from either side. As Beck ascended the main ravine, I hope to descend by the south one. My trail helped a little by running down into it. Here I found water very appreciable.

Not being able to eat the whole of a can of pottee, I threw it into the pool below me, and about two dozen prawns are now quarreling over it. The largest one is an albino, probably due to a recent moulting. He stands above the can feeding himself with the first pair of appendages, which are developed into auxiliary maxillae. The second and third pairs are clawed, the former being quite short and used to pick up food and pass it to the maxillae; the latter are long and prominent, and are used more as weapons of offense and defense than for grasping food. I am inclined to the belief that these animals' worst enemies are the members of their own species, and consequently the development of protective and assaulting weapons has been necessary for the advancement of the species. (A most strikingly marked fly rests upon my left hand. The eyes are red; legs are black; and wings have black edges.)



x 2

Battleship gray

Black

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The prawns possess three appendages that could be called legs, and walk forwards or sidewise with them. The abdomen consists of six segments, each with paddle-like appendages, the sixth appearing as a broad, four-lobed tail. Normally the abdomen is held straight, but at the slightest provocation it is quickly doubled under, propelling the prawn rapidly rearward and upward. The appendages of the five forward segments are used in swimming forward.

Returning to the thorax which is protected by a shield with a notched "barbed-wire cutter" between the elevated, pedestaled eyes, there are two pairs of antennae, the latter pointing backwards and as long as the body; the foremost divided with antennule pointing directly forward and the longer half moving freely above the animal. Both antennae have basal segments developed into horizontal, flanged rudders. These prawns are greatly relished by the natives, who eat large quantities of them. The herons also indulge in a feast of prawn occasionally. As edible crustaceans they are about on a par with shrimps or perhaps a little more tasty.

Returning down trail, for waterfalls soon convinced me of the inadvisability of getting into the canyon, I heard nothing of pigeon. Saw three tropic-birds high aloft. At the forks of the canyon I indulged in four oranges, two of which a young Tahitian belle who was about as good looking as they get gave to me with many smiles. At the house I found the family of San Ormand (East Indian) eating the frigate bird and proclaiming it most delicious. So I am trying it, and certainly find it the

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best seabird I have yet eaten. It was cooked in native oven. The stomach had two long fishes.

August 26

Showers this morning. Came along road to Mahaena as far as two small, wooden bridges with a native house nearby. Meeting a native there, he naturally informed me that there were Rupi behind his place. He conducted me to the trail leading to the ridge opposite the one I ascended yesterday. Most of the ferns had been burnt off, so walking was comparatively easy. I called into the valleys on either side without response. Am now at the summit of the ferns, but forgot to bring barometer. Would estimate that they seldom extend to one thousand feet, although they approach it.

The birds noted were a hawk hunting along the ridges above, some mynas, and the one best noise-maker of Tahiti, the kingfisher "Ruro". His clattering whistle resounds from every side quite frequently. Before the invasion of the myna, his was the one cheerful note of these woods, the dove and pigeon being more inclined to sentimental seriousness. Am hoping to make the descent of the next valley at the head of which I now am. Natives reported pigeons here somewhere, but I have my doubts as to their plentifulness. There may be one or two pair, perhaps, in some pocket of a ravine. Have decided upon spending next week around the peninsula of Taravao.

The geological youth of Tahiti is especially evident here where the ravines have not yet cut seriously into the evenly

best sandwich I have yet eaten. It was cooked in native oven. The stomach had two long flabes.

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sloping, broad, flat ridges of the lower slopes. Higher up, where rains are more frequent and altitudes more propitious, erosion has progressed far more rapidly and the ridges are being torn down by the elements. What a tremendous amount of soil is carried into the lagoon!

I called down the edge of the further ravine. Sounds of falling water forewarned me to not attempt descending there. The ferns ceased abruptly and the whole flat ridge was covered with pandanus and other trees which had sprung up recently where larger growths had been cleared and coconut palms very recently planted. I came upon a pile of sprouting nuts and hoped to have a feast, but found the interior quite soured and not edible. Why there should be dense jungle and then nothing but low ferns in the very same conditions is a little puzzling, unless fires account for it. The fern so prevalent is, perhaps, the fire weed of this country which springs up after each fire and excludes other growths. I found a good trail leading down beside the ravines, but calls were unanswered.

At the road I met a caste who told me the Rupi lived in the small ravine next their house. I followed her to the place and took up the sidehill leading above the recommended ravine. Helped myself to a coconut and then called for several minutes. Above, I discovered the ravine was the same I had just come down. Returned to road and Hitiaa, determined to go on to Faone. It was well, too, because the host's brother-in-law is returning home today via canoe, and will take my outfit back there. The sister-in-law left on horse back, and I put shells

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and corn-meal behind the saddle. Since she left, it has rained rather heavily here, but it looks clear and hopeful towards Faone.

We got under way at five P. M. in the same canoe with which I visited the islands. The delay was caused by a new canoe, still decidedly in the rough, being brought down from inland. Only axes have been used upon it thus far. A small, tough stick was embedded in the bow, and to it were fastened six broad, looped strips of Puro (hibiscus bark). Into each of these loops a native inserted himself, and the six men dragged the heavy canoe some hundred meters to the shade of a mango tree alongside a work bench. There the finishing will be done in the many hours of leisure these natives find. We call it leisure, but it is a pleasant occupation necessary for their biological existence.

This is a very fascinating canoe ride along the lagoon shore. Were I a tourist, my method of seeing such an island as Tahiti would be by canoe. The fringe of coco-palms, with frequent huts and occasional villages, is indeed a pleasant transition from the deep blue, or opalescent, lagoon to the emerald hillsides beyond, with the lighter ridges and deeper colored ravines. Then there are great deep valleys penetrating to the magnificent summits covered with foliage now and then seen from amongst the ever present clouds.

The channel along here is exceptionally deep and broad. Opposite those cliffs below the road bed which remind one of the California coast below Carmel, we again rode the waves. I have

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considerable objections to these canoes in really rough conditions. The waves were not bad, but we shipped a bit of sea now and then which kept one man busy bailing at intervals. During one of these intervals, a more than ordinary choppy wave struck us. Someone leaned too far to one side. The out-rigger reared a foot threateningly above the water. Someone leaned too far the other way and plunged the out-rigger as deep as it had been high. Someone else felt something like a heart up in or about his mouth. But nothing more serious than that happened, unless considerable salty water splashed upon the gun could be called more serious. Now that it is all over and we are safely ashore and securely housed, it is quite thrilling to recall the nearness of an upset. Following the incident I kept up my courage by running through the small repertoire of songs I have. The natives hardly spoke during the journey across the wavy water, which happening after dark was a little more interesting on that account. Another thing that makes canoeing with these natives so fascinating is the way they keep just beyond the waves' breaking point, but no farther away than is necessary.

August 27

Left Faone at seven this morning and walked to Steven's place just beyond Taravao. There a horse was more easily caught than when Beck and I arrived by stage two weeks ago. After breakfast, we were about to proceed to Faone and thence to Tautira, but the kind native of Faone appeared upon the scene with a horse and cart bearing my equipment, minus, however, my

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Left Fono at seven this morning and walked to Steven's place just beyond Taravao. There a horse was more easily sought than when Beck and I arrived by stage two weeks ago. After breakfast, we were about to proceed to Fono and thence to Tautira, but the kind native of Fono appeared upon the scene with a horse and cart bearing my equipment, minus, however, my

field trousers and raincoat which I had left hanging on a line to dry at Faone.

Steven and his wife, a very nice lady, drove me to Tautira. Along the route weaver and myna birds were very prevalent. Saw a few yellow-billed terns off the shore, and two tropic-birds in neighborhood of cliffs. The two valleys, Tehoro and Ahaoini, promised good penetration of the peninsula before River Vaitapiha, where we found the bridge washed out some time since and not repaired; and just beyond, the river had cut away the bank along which the road ran. Here a kind-hearted Frenchman had most securely nailed heavy poles across gaps made in his fence to circumvent the washout. What a government to let anyone do such a trick! His land must of necessity be confiscated soon anyway. And what a democratic spirit the plantation owner must possess! My estimation of the French lowers continually. It is a great consolation for not having been sent overseas. I like Germans as individuals much better. Called at Knapp's and paid my respects to his famous baboon; then went on to village and secured lodgings.

August 28

Spent the morning writing. Lunched with Knapp in his commodious native bungalow. Where the river Vaitapiha empties into the lagoon off a spit of gravel, yellow-billed terns have been fishing all morning. A booby also was there; it alighted upon the water and apparently was helping itself to fish below the surface. The terns did a great deal of diving. One or two

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Steven and his wife, a very nice lady, drove me to Tamatire. Along the route weaver and myna birds were very prevalent. Saw a few yellow-billed terns off the shore, and two tropic-birds in neighborhood of cliffs. The two valleys, Tamoro and Ahaotu, promised good penetration of the peninsula before River Vaitapiha, where we found the bridge washed out some time since and not repaired; and just beyond, the river had cut away the bank along which the road ran. Here a kind-hearted Frenchman had most securely nailed heavy poles across gaps made in his fence to circumvent the washout. What a government to let anyone do such a trick! His land must of necessity be confiscated soon anyway. And what a democratic spirit the plantation owner must possess! My estimation of the French lowers continually. It is a great consolation for not having been sent overseas. I like Germans as individuals much better. Called at Knapp's and paid my respects to his famous baboon; then went on to village and secured lodgings.

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tatlers were seen on the shore. The terns keep up a guttural croaking when in company. Five of them are flying about the spithead and making sweeping scoops at the water. Here one dives within thirty meters of me. Nine terns are now present. Two tatlers are running up and down the beach searching for food. Frequently one sees the terns hover, take aim, and commence to dive but take wing again before striking the water. Six or seven tatlers come down stream and soar over the spithead, evidently returned migrants. I must collect one or two of them, unless I find some up the river. The terns now number ten. The spot most frequently aimed at is just where conflicting waves ripple over the spithead. Several times I have noticed that birds instead of diving merely swoop very near the surface and reach down with their bills into the water which is very shallow. Their catch there must be small fry indeed. These terns seem to prefer, or perhaps require, five to seven meters of altitude for a dive. They will be flying along three or four meters high with watchful, downcast eyes, when suddenly espying a fish below up they soar two or three meters almost vertically, then hover an instant before diving upon the finny folk below. A bird coming into the crowd introduces himself by a series of croaking calls, occasionally reaching a high pitch, but one has to use his throat gutturally to imitate them.

This evening two bristle-thighed curlews came across the lagoon. At my joining into their conversation, they came low down overhead, and one alighted along the spithead opposite. I shall endeavor to get one during the week. These are the

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This evening two brightly-tinged curlews came across the lagoon. At my joining into their conversation, they came low down overhead, and one alighted along the spitheed opposite. I shall endeavor to get one during the week. These are the

the first we have observed at Tahiti, and the first returning migrants since summer. They are nowhere numerous. As dusk approached, the terns left for roost on stakes and sticks above the lagoon. Reef herons and tatlers were seen late at the spit. Mynas flying in the direction of the village of Tautira in pairs. Very numerous and noisy.

August 29

Daylight dawns in this village with a terrible din of crowing cocks and chattering myna birds. Got away at eight A. M. with not very heavy loads. Followed up River Vaitapiha to Valley Vaiitia, or the forks of the stream. Saw nothing but myna and kingfishers while entering. Pair of swallows at camp. Pitched shelter and ate lunch; then proceeded up right fork (V. Vaiitia). Saw a hawk, but could not attract its attention. Saw swallows and kingfishers. Nothing else thus far. Elevation six hundred feet.

As one suspects from the views obtained from the mainland, this peninsula appears to be older geologically than Tahiti. Erosion has accomplished more in making the scenery more irregular. This valley should be visited by geologists. It cuts through the center of the peninsula, reaching to the base of Mt. Ronia. Although we are now well over eight kilometers inland, we are not as many feet high. This is the first valley of its kind I have struck. The bottom of the valley is filled with an irregular mass of fresh detritus, ranging from enormous boulders to very fine

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sand. In an ideal condition for forming conglomerate rocks. The water-lines show signs of frequent floods which must be terrific in their madness. They have kept the valley floor, which is not very wide, quite clear of vegetation. The regular stream has formed a small channel through the deposits of boulders. The chief feature is the immense amount of coarse sand and fine gravel that makes walking fairly easy along the river-bed. The present stream is but a mere brook from camp up this way. Several small waterfalls come over the valley walls along the route, yet it is not strikingly gorge-like, but rather a wide V-shaped valley. The exposed beds along the washed channel show a decidedly steep dip seaward. Everything seems volcanic, but of immensely different ages of deposition. Conglomerate very frequent. Some slate-like rocks.

Sky overcast and threatening. Unless there are prone to be more birds in the other valley we'll pull out tomorrow. It would be none too comfortable to get caught in a cloudburst where we are camped. A rain not commencing until early morning will not be so bad. This stream must simply roll sand into the sea there at the spithead. No wonder it takes away bridges and roadbeds! A little higher I found the nearest thing to a fossil I have yet seen in Tahiti, a piece of bark fifteen centimeters long and three centimeters wide embedded in the matrix of a huge boulder of conglomerate. The boulder is decidedly out of "situ", though several similar ones are exposed in the gravel of the stream-bed. There is no rock in the canyon walls exposed corresponding to it, all the others being lavas and ash with

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cross dikes of basalt.

The explanation for all this recently deposited detritus is now evident. At an elevation of eight hundred feet I am within a kilometer of Mt. Ronia, which is forty-three hundred feet high. One third of the distance from me to the mountain this valley closes in at a waterfall, the wall being fully three hundred feet high; but the stream is small and only visible the lower two hundred feet. From the summit of the mountain to the ravine above the falls, there has been an immense landslip, which has left a broad, barren exposure of the steep slope. This was evidently accompanied by a veritable cloud-burst. The bed of this river became a raging torrent, perhaps twenty feet deep, as the water marks are frequently that high. These high marks may be due to a considerable filling of the stream-bed by the transported detritus and boulders of the slide. Now that large portion of the mountainside is somewhat evenly distributed betwixt here and the spithead in the lagoon, the larger boulders naturally being nearer the mountain base. Such impressive examples of erosion give one a fair idea of the battle of the elements which aim to tear down the mountains so energetically built up by millions of years of lava-flows.

Two pair of swallows up in here. The one I killed alighted far up on the brushy slope. Two reef herons rose from trees up the slope about on a level with the top of the waterfall. There is always the hope of finding swifts, and that leads us into these birdless gorges. As a general rule, I think the short valleys just beyond the plantations are most

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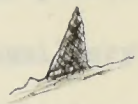
prolific in bird life. Gnats are very bothersome.

The thin cross dikes, almost vertical, occurring every few meters, have been the outstanding feature of this valley. A student of volcanic rocks would find an immense variety of specimens here for mineralogical analysis. The barren sides of the lower portion of the ravine would tell stratigraphically the sequence of the deposits to a limited extent. Such work must be greatly handicapped in the tropics by the density of the vegetation covering practically all the country.

Returned down stream to camp without seeing anything besides the kingfisher and swallows. Mosquitoes very bothersome until somewhat after dark, when rain and squalls of wind drove them away.

August 30

After coffee, we followed up the other stream, Natoiti, until just below the needle of rock, Teure vaiiarava, which is such a prominent feature of the peninsula.



All along the stream-bed were mollusks, of which there are three distinct species.

And very frequently were seen those bewildering heaps of shells cracked open as if some bird had gathered the mollusks and fed upon them at length on the one rock. We set two deadfalls, but it is my belief that the feeding is done either during the night or at dusk and dawn. Otherwise, how comes it that in all our traveling up and down these streams we have not seen the bird that enjoys the feast? This is, indeed, a birdless valley,

prolific in bird life. Ducks are very bothersome.

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so much so that I see no use in continuing farther. No signs of cliffs where swifts might dwell, no sign of food for pigeons, nothing along the stream, and evidently little or nothing elsewhere. Even the green dove is missing.

The high mountain, on the map Mt. Roniu, is Maiiremii, so my guide tells me. The conformation of this valley does not appear much like a crater, although erosion has accomplished so much that it is quite difficult to tell anything from below. A view from above might help out in that respect. The great boulders filling the bed of the stream are basic lavas, considerably crystalline and greatly resembling granites. Of the vegetation there is nothing unusual for Tahiti.

We heard one tatler and saw a hawk while returning, but could get a shot at neither. A few reef herons were also present and one circled about several times, but I was unable to locate anything of a nest. Broke camp and left at two P. M. Down the river were reef herons and kingfishers. Finally, at a ford, a green heron croaked at us. Seeing that it was perfectly tame, I attempted to close in for a shot with the auxiliary. Was quite close, but a sputtering cartridge let the bird escape uninjured through the tree branches where I could not get the wing shot upon which I had depended. An hour before sunset I crossed to the spithead opposite Knapp's with Gaston. While landing, a curlew came singing by. Hurriedly jumping ashore, I grabbed a shell and tried to load the gun. The shell stuck and required extra force, giving the bird time to get out of range. He left the neighborhood and we got nothing but some distant shots at

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tatlers during the evening. A booby came over head just about dusk.

August 31

It is always worth while to learn a new stunt. A green coconut can be husked by smashing the husk against a tree until readily pulled off. Then the shell can be broken open with a rock.

Went out this morning in a canoe. The first objective was a white heron seen on the reef. He did not allow us to approach within range, and, taking wing, departed to distant regions. Along the reef we picked up three tatlers. Headed for river to call for curlew. No response. A flock of seven tatlers were there, of which I obtained two. Summer plumages to still or already in winter robes. A yellow-billed tern came by. Failed to connect with him. Canoed across pass to where we thought the white heron flew, but failed to find him. A yellow-billed tern, characteristically perched upon a reef beacon, escaped me. Tatlers are here in numbers, and are arriving every day or so, dauntless little aristocrats who can spend three or four months in far-off Alaska, an ideal summer, and then come off to an ideal winter home in the South Seas. What a wanderlust must theirs be! What a passion for flight and travel they must have! Strangely enough, it is like their beautiful coat of mottled feathers, coincident to a swelling and development of the sexual organs. The tatlers proved to be mostly females, six of seven, plumage in various stages, organs all small. All birds excessively fat.

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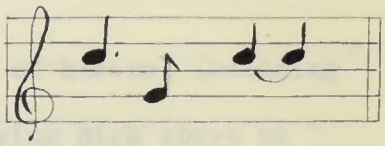
Returning in the canoe, we obtained one yellow-billed

tern. The spithead which had been alive with them Sunday was entirely deserted. Am out again in the evening to try for curlews.

So saying, I quit the log of driftwood upon which I had been seated writing, and proceeded along the island which is opposite the spithead. There are moist stretches, and even a puddle along the edge of the gravel and vegetation. Curlew calling as I went watching for birds. I was afraid there would be no results for the evening, when I saw two wings raised and fluttered, and heard the familiar slurring whistle, about as follows.



Not wishing to risk all on a wing shot, I took a pot and then followed it up with a wing shot which dropped the bird into the beach. Again there comes that thrill of success. Here is a very common bird which we have failed to come across during our year in Tahiti. The bristle-thighed curlew was recorded first from this region, and only recently was its nesting place in far-off Alaska discovered. We found them abundant at Christmas Island, and one went over the ship as we returned from Pupa. The weather conditions at present are excellent, and if they hold up we should succeed in getting around the peninsula all right.

September 1

This morning I skinned the curlew, in which I found five snails, shells and all. In the afternoon, with my man, we struck around the trail. Reef herons flying out from palms overhead

turn. The eighteen weeks had been alive with them Dunlap was entirely deserted. As out again in the evening to try for curlews.

So saying, I quit the log of driftwood upon which I had been seated writing, and proceeded along the island which is opposite the eastward. There are moist stretches, and even a puddle along the edge of the gravel and vegetation. Curlew calling as I went watching for birds. I was afraid there would be no results for the evening, when I saw two wings raised and fluttered, and heard the familiar alarring whistle, about as follows.

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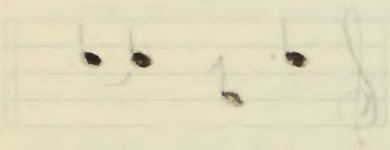

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September 1

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were frequent, but so habitual has it become to draw on all birds that at last I was rewarded, for the bird that came over the coconut palms was not a heron but a hawk, and although the shot was a long one he dropped dead into the lagoon. I had observed one but a short while back along the road soaring above the steep hills that approach this shore, but had little hopes of his coming down within range.

We found a family in the house we were to occupy, so I turned in on the grass, and even there where the fresh tradewind struck me was none too cool. Several dark clouds through the night.

Just after getting the hawk a pair of herons, including a white one, came in from the reef, and flying high above us headed for the mountain side. Could not see them alight, or I would have ventured after the albino. Myna birds exceedingly thick along here, and were on shoals in the lagoon feeding in sizable flocks; certainly they are omnivorous. Passed a cliff where Tamai says tropic-birds "parahi". We will try to arrange to come back during middle of day so as to shoot some. Saw two swallows in amongst breadfruit trees, but didn't get a second glimpse. One or two tatlers along shore; it being low tide, they were perhaps on the reef.

September 2

Struggled with the hawk this morning. Found his gizzard full of rat fur. We came up Aiurua valley. Obtained a cuckoo in maupi trees low down. Myna quite thick, and kingfishers very

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September 8

Struggled with the hawk this morning. Found his elegant tail of rat fur. We came up Aluvia valley. Obtained a cockoo in manyi trees low down. Syma quite thick, and kingfishers very

plentiful. Have heard only one dove thus far. Tamai now tells me that Noha dwells in the mountains nearby. We took the small creek at the fork and followed up it into one of the many ravines from whence its tributaries flow. Here my calling was answered unmistakably by a Rupi. Had some difficulty in explaining to Tamai that I desired getting upon the ridge betwixt two ravines for reconnoitring. Once up there (it was pointed with bamboo, and our ascent and descent were by means of that brush), we heard the call from the next ravine. Thither we hurried, and from the river bed, after considerable "paurauing", I descried two pigeons perched in a fig tree high up the ravine slope. We climbed up to their altitude, and then approached along the hillside. But alas! from the last point whence they were visible they were well beyond range. We had to cross a sharp gulch, and after doing so search for an opportunity to get sight of our quarry. When at last that place was found, it was within twenty meters of the fig tree, and the birds had departed. I have called at length with no reply since we stopped here. This is not a grand nor glorious feeling, but since they would not come to me, I was obliged to come to them, and the jungle was strictly in their favor. However, I know they dwell in this valley.

We dropped down to the stream for lunch, afterwards going up stream. As was to be expected, replies came from the hillside whence we had descended. My coaxing does not seem very attractive to these birds. One answers my calling, so I must get the reception committee ready. Alas, he approached not, but for ten minutes or more "pauraued" from across the ravine. Now he has ceased to

plentiful. Have heard only one dove thus far. Kamal now tells me that Moks dwells in the mountains nearby. We took the small creek at the fork and followed up it into one of the many ravines from whence its tributaries flow. Here my calling was answered immediately by a Mopi. Had some difficulty in explaining to Kamal that I desired getting upon the ridge betwixt two ravines for reconnoitering. Once up there (it was pointed with bamboo, and our ascent and descent were by means of that grass), we heard the call from the next ravine. Thither we hurried, and from the river bed, after considerable "pantomiming", I descried two pigeons perched in a fig tree high up the ravine slope. We climbed up to their altitude, and then approached along the hillside. But alas! from the last point whence they were visible they were well beyond range. We had to cross a sharp gulch, and after doing so search for an opportunity to get sight of our quarry. When at last that place was found, it was within twenty meters of the fig tree, and the birds had departed. I have called at length with no reply since we stopped here. This is not a grand nor glorious feeling, but since they would not come to me, I was obliged to come to them, and the jungle was strictly in their favor. However, I know they dwell in this valley.

We dropped down to the stream for lunch, afterwards going up stream. As was to be expected, replies came from the hillside whence we had descended. My coaxing does not seem very attractive to these birds. One answers my calling, so I must get the reception committee ready. Alas, he approached not, but for ten minutes or more "pantomed" from across the ravine. Now he has ceased to

call. But hark! What is that louder, more distinct, and not so far away? Ah, he comes my way and calls again! I answer very appealingly. A flutter of wings, but he has overestimated the distance and flies beyond. More "paurauing". There he alights very close, but I cannot take the risk. Bang! Thud! Yes, boy, it is a grand and glorious feeling! Pretty badly shot up, but they have lots of feathers. Now comes another call from across the ravine. Have I separated the pair seen before, or are there more here?

We had to come up the slope away from the water and its noise to do successful calling. Kingfishers chase one another about through the tree tops, uttering their staccato, chatter-like whistle. Off in pursuit of the other bird which refuses to come my way, and continued to sit quietly wherever it was in spite of my coaxing. Called for an hour, but, desiring to get in and take care of the birds I had, we went on down the stream to the house. Tamai pointed out the trail leading up the Noha ridge, but told me that it was heavily over-grown with brush. So I decided to postpone that trip until Monday. Proceeded into camp after loading down with oranges.

September 3

Let Temai go back to Tautira to spend the week-end with his bride. Sent a soft rock--almost clay--to George Brittel for carving purposes. After finishing the pigeon, which was quite a task as it was badly shot in the breast, and the cuckoo shot through the lower abdomen which nearly lost its entire tail, I

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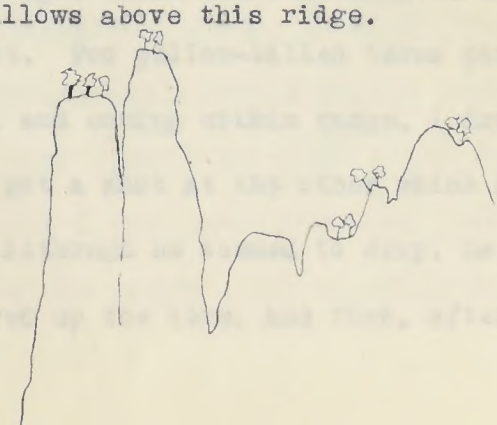
came up to the Rupi ravines where I have spent the day calling from ridges. One reluctant call occasionally coming from the position whence we last heard calls yesterday, I am almost induced to believe there is a nest here, so have climbed up by roots and brush until I figure I am almost on the proper level. There are fig trees (pua) here, however, which may merely signify that the bird was feeding. One or two calls came from the next ravine to this,--the place where we obtained the bird yesterday,--but I selected this bird for the day. The ridge is steep, but well covered with "ieie" and vines and trees standing out at almost horizontal directions. I am on one out some eight or ten feet from the cliff where I can look over the vines and see the "pua" trees. A vertical tree beside me is at least fifteen feet tall at my level.

A very striking rock formation stands on the divide above these ravines, a superb place for the hawks to nest, but I have seen none flying about it these past two days. The two needles are very prominent, the left one being about twenty feet across at the top,--a distant estimation. While calling for Rupi this morning, a hawk twice flew overhead; the tree tops prevented a shot the first time, and he was out of range the second time. I saw a kingfisher noisily scolding and chasing a myna bird today. Three or four swallows above this ridge.



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After I had started the return journey a Rupi called far back up the valley. I stopped and "pauraued" at length, but to no avail, so proceeded homeward. Aroused a wild pig from his rooting amongst Arum roots, but could not get in a shot. Loaded up with oranges and a bamboo cane of water, I went into camp just before dark. A dove answering my call by flying into a tree nearby the oranges, I shot it, but it fell into some fern roots lower down and I could not obtain it. During the night I heard noddy terns, but could not locate their roosting place. Saw boobies out beyond the reef just before dusk. Native canoes were standing by at the point of the reef awaiting approaching darkness to commence their fishing. Transportation of copra from beyond here to Tautira is done by canoes, several passing daily.

September 4

Spent the morning reading. At about eleven the family which has squatted here, and which left left the morning after our arrival, called for a visit. As they were leaving, I saw a white reef heron fly across the pass and alight on the reef. Revealing a desire to get out there, I induced the native to offer me his "vaa". So, disregarding the day in the sacredness of the bird, I went out in a single canoe and succeeded in winging the bird by a very long shot. Two yellow-billed terns perched on nearby rocks took wing, and coming within range, I dropped one; then, after reloading, got a shot at the other which hovered near his fallen companion. Although he seemed to drop, he caught wing and departed. I gathered up the tern, and then, after dispatching

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it and wrapping it up, proceeded to get the heron who stood tranquilly upon the reef, whence large waves would frequently wash him. Had to use another shell to save a race over the reef, for his legs were uninjured, and there was a probability of the canoe escaping. He is a beautiful bird, with just one blue feather on the back.

Returning to the shore, I observed a white speck floating on the lagoon. A little later a tern circled low above it. Curiously I approached, and sure enough, it was the second bird I had shot at. Both are jet-black-capped specimens which we have not been very successful in securing. So, all in all, the Sunday violation proved worth while, and what with the time required to skin the birds, will more than compensate the time I took to write letters Thursday morning.

September 5

I spoiled one tern yesterday by scraping too hard upon moulting neck feathers in an effort to remove the fat. Had trouble with the heron too, for he bled freely where his wing was broken. Mosquitoes, small flies, and fleas are very bad about this place. After doing a bit of sewing, I left for the valley earlier than any morning last week. A native going after bamboo overtook me at the second ford. He gives the green heron the credit of leaving snail shells on the rocks along the stream-bed. Myna and kingfisher very thick along lower woods. From my calling ridge I get very unsatisfactory results, though I thought I heard a distant answer. It rained briefly here

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Proceeded to the neighborhood of the Rupi heard last week. My calling gets very poor results. There comes an answer from far up the further ravine. It is disinterested. Just as I determined to go towards it, calling was heard from the opposite direction. Both were very disinterested. I crossed to the next ridge but heard nothing more. Soon after noon rain commenced falling, and, although I remained in the vicinity for three hours, nothing more was heard of the pigeons. A little more vigorous campaign early in the morning would have been better, but I have such confidence in my calling that I prefer to try it well before climbing perpendicular cliffs and then being unable to get a shot at the bird. If the bird approaches you, your chances of a shot are many times greater than when you attempt to approach the bird. Temai failed to show up this evening with provisions.

September 6

A little cloudy this morning, but appears to be a very good day. As I left the house this morning I could not refrain from restaking a native horse which has been tied to one tree for the five days we have been here without anyone coming near it. Yet some fiction writers are claiming that these natives are the essence of kindness. To me they appear quite as selfish as the most modern, commercialized profiteer. The jungle is wet and drippy this morning. As I reach the calling ridge I am quite

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as wet as I was yesterday during the rain. It so happened that every shower came just as I reached a maupi grove, and the great distorted bowls of those trees proved ample shelter.

No birds respond to my calling as yet this morning. Evidently I did not break up a pair, but probably found a single and lonesome bird on Friday. Kingfishers, as usual, are chattering and scolding me from trees above. Last night a rat got into my birds and, strangely enough, chewed the beak off the least desirable specimen,--a cuckoo. There comes the first Rupi "coo", which is more of a "whoo!", from the next ravine. Away! And I hadn't gone far, down and across the creek, when I heard again the call of Rupi. This time it was very close in the trees just up the opposite side the ravine, just above my most frequented calling place. How cautiously I moved up that slope until a position was gained which commanded the tree tops. Then a long search for the bird. Again he calls just over to the left. No! He is calling to the right. I see him, perched high on a dead limb, looking about for the calling bird below. Just the proper range and a dead easy shot! He rolled down the ravine slope considerably. What heavy birds they are! While I was wrapping him up, there came again from overhead the call of Rupi. What, a pair? Evidently! But continued stalking failed to reveal the other bird. His last call seemed to come from the fig tree up the slope, but could not see him after I had climbed up there. A green dove came down into the lower branches of the trees below which I was calling. Myna birds plentiful even in here. Kingfishers numerous.

The next call came distantly from the southeast ravines. As it sounded disinterested, I had little expectations of the

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bird's approaching, so have decided upon ascending a ridge in that direction. Located a bunch of ripe fei and am taking them along with me to substitute for bread if Temai fails to arrive tonight. Had not the squatter's boy brought me two loaves of bread Sunday morning, my bill of fare would have been canned meat only. Cloudy and very likely to rain again this afternoon. In fact, it is trying to sprinkle now. A hawk just circled past the clear space in the canopy of leaves overhead. In spite of my calling he would not come down within range. Well, one can hardly expect two at the same trip. No answering calls from Rupi since I left above.

Lunched down at the stream and then scaled the southeast ridge. My location brought me out beyond the calling pigeons, but near a fig tree. There are at least two more Rupi in this neighborhood. One I saw fly from along this slope to a tree just above where I killed the bird this morning, while another answers from above me. In flying, these birds use a very slow wing beat, not much faster than the hawk. The dark and light blue of the bird could be distinguished at a considerable distance. The clouds have blown over and we may have a good day, after all its threats. After "paurauing" at length it is perfectly evident that the bird above does not intend to come down here. I have heard or seen nothing of the other since his flight across the head of the ravine. I may find time to go back for him, but his not answering my calls failed to encourage such efforts.

As it was getting along in the afternoon, I returned to the hut. Kingfishers more than usually noisy overhead. One I

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collected as it appeared to be unusually white below. This one's organs were beginning to swell, which very likely accounts for the increased activity of late. It is very likely that the hilarious flight and diving amongst tree tops of two or more of them is a courting performance. Doves were calling in the neighborhood of the orange groves.

Temai was at the hut but not alone, having brought wife, father, brother and big sister with him. In spite of threatening clouds I slept out on the soft carpet of grass.

September 7

All the clouds passed safely overhead, but several of them left damp calling cards in a light mist which fell after they passed. But this morning while we are getting breakfast two showers have passed. This puts a damp damper on my proposed Noha trip. The old man was going to accompany me, Temai having a sick stomach, or at least preferring to stay down here with his young wife. The alternative trip will be along the coast to the caves, where I hope to find something worth while, preferably swifts.

The young boy, dressed in boy costume of a shirt just barely reaching below his thighs, (that's much longer than they usually are) is having a very difficult time husking a huge coconut on an unsteady stake, while the old man is burning the native coffee in a piece of a kerosene tin. It makes an abominable beverage, strong enough to make a whole set of spoons stand up.

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The young boy, dressed in boy costume of a shirt just barely reaching below his thighs, (that's much longer than they usually are) is having a very difficult time making a huge coconut on an unsteady stave, while the old man is burning the native coffee in a piece of a kerosene tin. It makes an admirable beverage, strong enough to make a whole set of spoons stand up.

We didn't get started until past seven. The trail led along the beach. In the neighborhood of the islands there is a splendid fringing reef within the lagoon and barrier out by the islets. Along this broad fringe I walked to look for a plover among the scattering tatlers, but saw none. Reef herons are plentiful but all dark. The reef was especially rich in holothurians of apparently three species: a small serpent starfish with long, sinewy, spined legs (I believe it was a starfish), crabs, an occasional eel, many fish, mollusks of various kinds, and many other forms of sea life that help to make the intertidal zone always a place of fascination to a lover of life and its intricate forms. The River Vaiote has a pass just this side the islands. It is on the southeast of the land, and the trades beating the waves in through the pass certainly have kept the shore wave washed. Beyond here the reef is marked upon the map as submerged, and our trail takes up over the edge of the hills.

We have finally emerged above the cliffs where yellow-billed tropic-birds are abundant. I have not yet seen a red-tailed near Tahiti, and the natives claim they do not dwell here. As we started out this morning, a hawk winging his way down the beach all but came within range. He circled when I called him, but probably saw us. Here was another flying along the cliff some fifty feet or more below me,--an easy shot but not retrievable. So I coax with a whistle. He rises and now passes over the point within range, but I missed him.

Out where the reef is can be seen a light green streak. What a dangerous thing for a ship in a storm, for the waves pass

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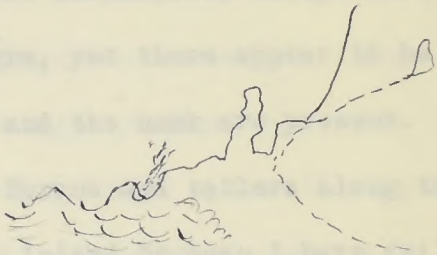
Out where the reef is can be seen a light green stream. What a dangerous thing for a ship in a storm, for the waves pass

over it without breaking, and, as it is a quarter of a mile from shore, in a dark night even these hills might not be visible, and sailors might think the breakers ashore the reef. Beyond the Vaiote, the trail takes to the sea. Just beyond, it is quite interesting. The high waves dash madly against the headland of rock. The trail threatens to find a way around, but instead dodges back and uphill to a hole which penetrates the cliff. Emerging into a cove eaten back into the rocks, it makes a very nice passageway, but the waves dash up into the bottom of the cove.

A native, his boy and "vahine" were making copra at Vaiote but decided to go along with us. He went first. Waiting for a lull in the waves, he proceeded along the coral shelf just below water level a rod or two, then climbed up the rocks a few feet and waited for a large wave period to pass. At the next quiescent stage he descended to the shelf and ran to safety four or five rods beyond. Vahine went next, but as she started the long run conflicting warnings from her husband ahead and my guide behind, and perhaps her own timidity caused her to hesitate. The wave struck her high around the waist and dashed higher, but being a small one it did not tear her away from the rocks. She made safety at the next pause. The boy made the passage splendidly. Watching them from above, the danger was magnified. So I left jacket and all note books, paper etc. behind and proceeded



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with cartridges tied in a bandana and the gun. At the safety point, while waiting a lull in the waves, an unusually large one came rolling in with a great deal of fuss. It threatened to splash me. Why get wet? I went up the rocks and found them accessible to a good shelf which led to dry land. One should never blindly follow natives. Their method is not always the best or the safest. Again we had a wide fringing coral shelf where walking was better than along the beach. A kilometer or so beyond we reached the cave, and found the opeia reported. But alas! 'twas but a swallow and not the swift I anticipated.

I see no inducement to proceeding around this peninsula farther than this. These parts are uninhabited except while the natives are fishing or making copra, yet there appear to be no more birds than elsewhere. Myna and the hawk are present. Rupi may dwell inland, as at Aiurua. Herons and tatlers along the shore. I believe the herons nest inland because I have failed at all times to see any sign of nest in trees near the shore from whence birds have flown. Strangely enough, the natives know nothing of nests or young birds, which proves that they must be cautiously hidden.

A rather strong breeze blowing this evening presages no rain in the mountains in spite of the clouds or fog lurking about the peaks.

September 8

I aroused the family at daylight this morning. "Papa" and the boy (poor little cuss, he is deaf amongst an unsympa-

with cartridges tied in a bandana and the gun. At the safety point, while waiting a lull in the waves, an unusually large one came rolling in with a great deal of force. It threatened to splash me. My get wet! I went up the rocks and found them accessible to a good shelf which led to dry land. One should never blindly follow natives. Their method is not always the best or the safest. Again we had a wide fringing coral shelf where walking was better than along the beach. A kilometer or so beyond we reached the cave, and found the opala reported. But alas! 'twas but a swallow and not the swift I anticipated.

I see no inducement to proceeding around this peninsula farther than this. These parts are uninhabited except while the natives are fishing or making copra, yet there appear to be no more birds than elsewhere. Hawks and the hawk are present. Owl may dwell inland, as at Aluma. Herons and tattlers along the shore. I believe the heron nest inland because I have failed at all times to see any sign of nest in trees near the shore from whence birds have flown. Strangely enough, the natives know nothing of nests or young birds, which proves that they must be cautiously hidden.

A rather strong breeze blowing this evening presages no rain in the mountains in spite of the clouds or fog hovering about the peaks.

September 8

I aroused the family at daylight this morning. "Tapo" and the boy (poor little one, he is dear enough) an unusual-

thetic, ignorant people) helped get ready for the mountains. The lazy bunch, including Temai, hung around here yesterday and didn't even haul a load of water. We had not enough for dinner last night, and thirsty fish at that. I gave the extra cup of "popa" coffee to the boy instead of the older men. Bashful, little, brow-beaten cuss, he didn't know what to think of it! Our trail yesterday over the cliffs was blazed, and only by the blazes could we follow it. I became quite suspicious and questioned my garrulous guide. He told me an American had blazed it once for the benefit of future travelers, said American never intending to follow it again himself. No Tahitian would have bothered to mark a trail for anyone else, yet some people persist in calling Yankees selfish and Polynesians generous. They may be generous, but it's a thoughtless generosity.

We left at seven for the Noha ridge. The old man, as Temai still claimed to be "mauiui", (though I think a true diagnosis would call his ailment "honeymoonitis") took me, as I supposed he would, to the third ford, or the main forks of the Aiurua Anavai. There, with many gestures and a lengthened "paurau", he explained how upon a stormy night many Noha had been driven to earth by a very heavy wind. He had found on three successive days, five, seven, and ten birds amongst the maupi roots next the river. As this was below the peak between the forks of the river, he concludes that the birds live on that peak, but it is also possible that said peak is but a landmark from which they get their bearings in seeking their burrows. Furthermore, the birds coming inland for shelter in a

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southeast gale, if it were foggy, might very well have been dashed against the peak, which is decidedly perpendicular, and so have fallen below it. The ridge behind this peak appears to me to be far too rocky for Noha burrowing, and rather low besides.

We went down stream to the mountain trail and began the ascent. About four hundred feet up we left a small rivulet and the old man informed me that it was the last water, after assuring me all morning that there was water where "Noha parahi" (dwelt). Had I surmised the truth I would have had him burdened with a section of bamboo full of water. Well, I'll learn in time. Luckily I filled my jacket with oranges which will somewhat save the day. The trail at five hundred feet started up a very steep and brushy slope, which will no doubt last until the ridge is gained at perhaps one thousand feet. This is very slow traveling. Cutting one's way up a slope more than 60° and carrying a gun and jacket full of oranges isn't exactly play. The native has quite a load but no cutting to do. I go to a point of rest and then pause while he comes up so as not to turn loose any rocks above him. As I expected from yesterday's experience, when I was much better able to follow the blazed trail than the old man, I am today leading the way while he hangs back asking "Tapu?", meaning "Do you see a blaze?" Well, there is a little self-satisfaction in finding a native who is not so wonderful as a mountaineer.

The wind continuing good and strong we should have very good weather. One thousand feet, and the brush continues

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as thick as ever, the guide continues as garrulous as ever, while I cut the brush and try not to listen to his "paurau". If natives ever came up here 'twas more than a year ago, and in the tropics that gives the brush all the opportunity for growth it needs. Taking stock of our moisture supply I find eight oranges, woody and wormy. Consumed one, the guide obligingly refusing his half.

The guide is now "paurauing" on Anumoa, four of which he claims escaped from a ship which was taking them to Australia to prey upon rabbits. He blames the scarcity of Itatae (gygis tern) to them. Of course he claims the Rupi was annihilated by the hawk. He says they formerly were very plentiful, but one must always allow for native exaggeration about ten fold. I made the remark that the brush couldn't get worse, knowing very well that it could. And it did. Our progress is very slow. At this rate we will hardly reach Noha altitude for the night's camp. May unusual luck and good fortune take us accidentally, or otherwise, into a colony of birds to repay this strenuous effort!

We stopped and ate lunch, and since then I've let the native do the trail cutting. After a certain length of time one's arm just simply refuses to strike with the proper force to cut this tough "ieie". It is high overhead here and we are virtually tunneling through it. What canyons these are! Even now this is as deep as the upper canyon of the Yellowstone, but how different! That is a rainbow of color, this a continuous green. Lights and shadows alone add variety to it. The

as thick as ever, the guide continues as garrulous as ever. While I eat the bread and try not to listen to his "yarns". If natives ever come up here 'twas more than a year ago, and in the tropics that gives the bread all the opportunity for growth it needs. Taking stock of our moisture supply I find eight oranges, woody and worry. Consumed one, the guide obligingly refusing his half.

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shadows are almost as dark as the exposed rocks where water trickles over strips of the hillside. We come out to a point and get a view inland. The main fork of Auirua runs fairly straight into the heart of the hills. The Rupi fork splits into a dozen small, sharp, walled ravines. Half a dozen prominent peaks with the inevitable connecting knife ridges are plainly visible from here. How good it feels to be up in the air again!

There is blood in our trail. The native has scratched himself where the ankle joint is on normal human beings. I have hopes of a pair of keds discarded at Moorea holding out for the trip. My leather shoes having served less than three weeks, and the good keds having been unable to withstand the long walk on the reef yesterday, I have but these between the earth and barefootedness.

This "ieie" still contains much moisture since the rain Monday. It doesn't taste so awful bad but the quantity is measurable by drops and so is only aggravating to the parched mouth. Out away from the brush on a tree one can see the ridge a few hundred feet above us. From an elevation like this one can see with appreciation how the vegetation takes advantage of every possible light space. Hardly anywhere except along the river-bed can the earth or rocks be seen. Every square inch of surface is taken up by the leaves of vines and trees and ferns in their ambition to live and manufacture food for parasites. Poor farmer plants! what a host of middlemen and idle beings live upon your products! The river-fork peak is so steep that at 2:45 P. M. it casts a shadow out to the bed of

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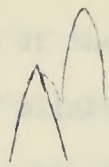
the river. It is very conical, being about half as wide at the base as at the summit. It is, of course, the prow of one of those knife-edged ridges rather than a real peak, and the knife is fairly sharp too. It is about a thousand feet above the river-bed. The Rupi ravine is about a sixty degree valley , V-shape, and cut laterally by eight or more sharper ravines in the neighborhood of the pigeons.



The brush changes to "ieie" and viny ferns, a most formidable combination. The afternoon sun strikes hot while one attempts to scramble up a steep slope covered with such an obstruction. Thus far, our journey has not been overly hot, a good breeze keeping us well cooled off. Two hawks are soaring above the ridge we hope to attain. Two swallows observed just above us. So hot did we get that another orange was sacrificed. Foolishly I took the larger half, and rightfully enough it was the woody end. On Mona Rotui, Moorea, I found water for washing purposes caught in the leaves of the "ieie". I made the remark then that I would never die of thirst on a mountain covered with that vine. I proved today that what's more, I would not go long with a parched mouth. It's a rich drink to be sure. The lower leaves contain well developed cultures of algae and no doubt microscopic organisms, but the topmost leaves hold about a tablespoonful of not bad water. The algae there are good and fresh, and, as any bacteria are unlikely to have ever passed a portion of their life cycle in mankind, I guess they're harmless. Well, it quenches one's thirst successfully at any rate.

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We thought to make a grand play by tackling the larger supplies in the pandanus proper, "Fara", but it had a terrible taste. The native hasn't tackled any from the "ieie" since.

We did expect to find not bad traveling along this ridge, which we reached just below 1600 feet. It took us ten hours to gain that elevation. On Mt. Washburn, Electric Peak, Sawtelle and similar mountains of the American Rockies it would mean not more than one hour of climbing. Elevations being the same, the tropic jungle makes a mountain ten times as hard to climb. Well, it adds a little safety and hides the vertical drops which makes the heights less dizzy. We may be below the fog line tonight; it is up about 3000 feet now. Do not expect to run into any burrows this evening, but may hear birds during the night which should guide us in our search. For the last hour I have taken over the pack, letting the guide go ahead to cut trail. It is brushy enough here for rail. Have not heard any as yet. Hawks enjoying aerial acrobats above the peaks.

Well, we did get as high as 1750 feet. Very brushy all over. The soil is splendid for shearwater burrowing, but landing places are very scarce. Just before reaching the ridge all conditions were favorable except altitude. We shoved on until dark, getting as far as we could after eleven hours of travel. While pitching camp at 6:10 a Noha passed over us, traveling inland from the sea, and called three or four times. Once it was so close that I grabbed the gun but he did not pass directly over us. Evidently his burrow is farther up the ridge.

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It is now twenty minutes past seven and no other birds have been heard. A hawk came over us this evening, evidently curious to know what was making such a stir in the brush. It is seldom he sees anything like a man's hat up here. Did not come down within range. I find that I'm not alone in drinking "pape ieie"; spiders, snails, worms and earwigs, and small, winged insects all seem to be aware of the life-giving element that is to be found at the base of those leaves. I had not much appetite for dinner, so gratifying was the food contained in the water, but I ate enough to get me thirsty before morning. Down in the valley I never look at an orange that is the least bit fermented, but one we had tonight tasted like stout wine, where it wasn't woody; I didn't throw away my half either. Anyone who doesn't realize that water is the medium of our life should try a trip like this just once.

7:53. A distant call. He called again somewhat nearer, so I scaled a pandanus tree to take bearings, but for ten minutes he did not call.

We awoke at 3:30 and heard one distant call. I read an hour listening. Read and wrote two hours after hearing the bird at eight P. M., for we added a lantern to our burdens. No near calls were heard and certainly nothing to encourage ploughing through this brush all day. In my opinion the wiser plan is to beat a hasty retreat and try once again for Rupi up in the ravine. There is some chance of getting one of them, and very little hope of finding Noha where so few were heard, and those while passing over not stopping.

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Awake again at six. Cloudy, and it rains! It rains! Already I have had a little sup of water collected by scraping the drops on the tent together. A good shower would relieve our thirst. We may get it.

September 9

My guide says that at Tubuai there is a bird, "Pitote". Upon explanation I found that he means the red-tailed tropic-bird, which is generally termed "Tavai", while "Mauroa" is the usual term for the yellow-billed. Here called "Tavae" locally. Following our sprinkle, we filled one good, big cup full of blessed water, and had chocolate for breakfast. The fog came in very dense. We shan't lack for external moistening returning, as the brush is considerably damp. What progress! Five hundred feet in one hour and no distance to speak of! We had gone up the ridge much farther than I expected. I always feel like a whipped puppy looks when I retreat without the birds I go after. But if we always found the specimens we seek, what a museum it would take to hold them all!

The second five hundred we made in forty minutes. The first was almost wholly composed of the ieie, and progress was greatly retarded by the cut stumps catching in one's clothing. If trousers are the things we slide our legs into of mornings, I have a pair indeed. I'll have to put on my "pareu" before I reach the house. The second lap has just enough "ieie" to assure one of something to grasp when his feet conceive the foolish idea that they are wings. I am carrying the lantern which

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received the same fate mine did on Mt. Temae. Being behind me, it got below me once when my feet took wing, and the rock my feet had parted from proved to have a hardness of more than # 6,-- I think that is glass position in the scale of solidity. A rest is quite a pleasure here. It takes about as much energy to untangle oneself from brush while descending a Tahitian mountain as it does to climb a peak of the Rockies. Elevation 250 feet.

10:20. Water again! Oh, blessed nectar, a drink fit for gods indeed! During this last lap we had some real climbing. My feet at one stage flew out suddenly, but I had hold of a good stout "ieie" with my right hand and it held securely. Of course I would not have fallen more than ten feet at the most, but that's plenty. Such thrilling work this is, with just enough risk in it to add zest to the daily routine! We mortals paradoxical, who hold as ideal the life secure and safe from all harm or evil, and yet who desire risk and temptation to make life interesting!

On Rupi ridge calling. Not a sound in response. A shower that passed over at noon might have put the pigeons out of humor. At the river we stripped what was left upon us of clothing and plunged into the delicious coolness. Rupi answers. Now for a "paurau"! It was a lengthy "paurau", lasting until four o'clock, but the two birds I heard call at different times never approached at all near. Several slight showers passed over. Nothing occurred on way to hut.

September 10

The early morning was spent sewing up trousers. Packed

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and already to move when a shower of considerable length came up. Are moving at last about 8:30. Showers all along the road, and as a consequence no tropic-birds were about the cliffs. Saw one flying about mouth of a canyon, but he refused to answer my calls or pay any attention to me. He was flying far too high to shoot. Herons and tatlers only other birds noticed along shore.

The boy and I shoved on and arrived at Tautira early in the afternoon. Rained considerably all day until late afternoon. Spent the day in rewrapping and endeavoring to improve the specimens. Will take stage to Papeete tomorrow unless I have to stop at Taravao to gather up raincoat and overalls.

September 11

Took stage from Tautira to Papeete. Making good connections at Taravao I did not stop for raincoat. Saw a green heron at mouth of Vaitapahi River, also yellow-billed tern and tatlers. Along the route the bird of most interest was a hawk at Moara striking the tall "Moa pape" (meadow weeds) in an endeavor to catch rats. After being scared by the truck, he calmly alighted on a papaya tree, where he remained perched after we passed. The shells being packed deeply in ditty bags, I did not break out the gun to break the Sabbath and shoot him. Reef herons, tatlers, yellow-billed terns, myna, and weaver birds along the road in varying numbers.

At Papeete I learned the very disconcerting news that the Becks had left Friday evening en route for Marquesas Isles.

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Much as I would personally have liked to have gone, it is all for the best of the collecting.

September 12

Mr. Beck left a letter instructing me in part: "If the weather permits you can tackle the plant collecting on Tahiti, and it will perhaps be best to go up high on the Mt. Aurai trail and look up the tubinares, as well as pick up a series of plants.

"It might be well, also, if you clean up this side of the island to visit Hitia in hopes of getting more pigeons and go up as far as possible on the trail and see if plants differ on that side...

"You might tackle any of the canyons we have not yet investigated, looking out for swifts as well as pigeons and rails, but make the high trip first if weather holds good."

In accordance with this I am spending today and what other time may be necessary getting sail-canvas bags made for the plant work. It would be utter folly here to tackle that work without thorough rain protection. Telescopic bags will be the only feasible carriers, one for each end of a pole. We have received no instructions as to how many specimens of each number to collect, so I am setting six as about the limit of our equipment's capacity.

My first objective is Mt. Aurai, and the goal will be the summit of that peak, 2065 meters high, and but 167 meters below the higher peak Orehena. This should give us the best

such as I would personally have liked to have gone, it is all for the best of the collecting.

September 12

Mr. Ram left a letter instructing me in part: "If the weather permits you can tackle the plant collecting on Yamiti, and it will perhaps be best to go up high on the Mt. Aurat trail and look up the tubmares, as well as pick up a series of plants.

"It might be well, also, if you clean up this side of the island to visit Nitia in hopes of getting more pigeons and go up as far as possible on the trail and see if plants differ on that side...

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the island can afford in the shearwater (P. rostrata), and if any high altitude birds exist there is the best place to find them. Most of my trips having been valley trips or below three thousand feet elevation, it is possible that the upper slopes still hold some surprise for us. It will be the ideal location for plant collecting, although it may be damp in the fog belt. I shall take a good supply of papers along, the first object being to reach the summit. Then we will establish a camp in a favorable locality and remain a week or ten days, as collecting demands.

Having finally found a shop where I could have made good sail-canvas, carrying bags with an oilcloth cover for protection from rain to protect drying plants and specimens, I next rode out to see the guide Tuaurai of Pirae, the only man who knows the trail to the summit of the mountain. He knows he's the only one, and finally agreed to go but would not consider a daily wage, and set his price for the trip at two hundred francs,-- a rather astonishing figure but I decided it was the only means of getting the mountain journey made. Besides this high price, another man will be necessary to carry the load, rather disconcerting when one has been requested to hold down expenses. However, plans soon presented themselves to overcome the difficulty.

I informed Frisbee, an amateur photographer, of the proposed trip. He comes to town tomorrow to see about it. I met a young literary aspirant named Croff, of Philadelphia, who has agreed to go and pay two hundred and fifty francs towards the expenses. Then there is a Mr. Ormond, Swiss sportsman, desirous

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of making just such a trip, and lastly the Secretary to the Governor. It is a mixed crew indeed, but since I plan upon a direct route to the summit and will not pause to work until that goal is reached these men all should be easily able to make the trip. Then those who so desire can return with the original guide in the six days he says are necessary. I will make one high camp as high as possible and work there until satisfied that plants and birds are thoroughly collected, then proceed down trail collecting thoroughly to the bottom. If these five men make the trip the average expense will amount to less than forty francs per diem.

September 13

Obtained quotations from four leading stores on our grocery order. Held a meeting of probable companions and explained the trip. We may yet be able to have the original five in number. Frisbee cannot go. It will hold expenses down nicely if that many go; less than that will run them rather high. No doubt others will avail themselves of the trail, once we get it cut out.

September 14

This morning finds three definite participants in the Mt. Aurai expedition. With my boy, Mateta, upon whom I intend to put the bulk of the botanical work of collecting, and the young fox terrier, Noha, I am getting started at the plant collecting in Fantana canyon. It is a bit of a contrast to

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September 14

This morning finds three definite participants in the Mt. Aurel expedition. With my boy, Mateta, upon whom I intend to put the bulk of the botanical work of collecting, and the young fox terrier, Bobs, I am getting started at the plant collecting in Pantana canyon. It is a bit of a contrast to

once again take the field on this dry end of the Island, especially where civilization and its escaped introductions are rapidly taking over the country. Lantana predominates here.

We saw four hawks above the ridge, two gygis terns, two tropic-birds and quite a number of swallows, myna and weaver birds. Have already heard one kingfisher, though we are not yet to the highest Chinese farm. There are several of these Chinese farms, unsanitary pig-pens, above the city water works. French science! Matete commenced working at five francs and grub per day straight town.

Mangoes are blooming and small fruit forming. Many other plants are in bloom, announcing the approach of Spring. Our first oranges are at an elevation of five hundred feet. The canyon here just below the forks of the river assumes that depth, darkness and coolness typical of Tahitian valley bottoms. My plans now are to penetrate to the base of the falls and there collect rather than collect along the road. These lower stretches can be done out from Papeete at any odd half day or so. Refreshments in order. The forks of the river are at an altitude of 550 feet. We have forded some six times or so since leaving the forks of the river. Noha did splendidly at the fords, although he has a mortal dread of the cold water. He had to swim several times. When I walked out over the river on a tree trunk he attempted to follow and took quite a tumble down the stream bank.

Rain! that curse to the collector. A sheltering rock for equipment. The Fantana waterfall has been variously estimated as to its height. I doubt if it falls a hundred meters.

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It should not be difficult to measure by triangulation. I learn so far that a cord some fifty meters in length will aid immensely in estimating height of trees. With that I could roughly measure these falls. While it rains I am sketching plants. Put up seven numbers of plants between showers. Rain certainly is a bother at this work. The present shower promises to be overly heavy. Motate brought a companion along today. He has gone off somewhere with him now. He isn't as interested in plant collecting as he is in birds. A pair of swallows came over us a little while ago. I hope it will rain itself out this week and give us good weather next, but an equinoctial storm may strike us, and very likely will.

Succeeded in collecting six numbers five each in spite of showers. Left falls at 3:30 and returned to town. Saw but one or two swallows en route. Arrived in town just in time to get the canvas plant-carrying bags with oilcloth covers that I have had made. I believe they will prove just right for keeping plants dry. Changing blotters twice a day here at Papeete ought to dry plants in a hurry. The changing will be good evening occupation.

September 15

Had a little trouble this morning finding a tape-measure, but finally succeeded at Core Naval. Motate to Yerex's with bicycle and changing blotters. I have hopes of his becoming efficient. Came off to the field without the pup.

At the French plantation a hawk hovering above a grazed meadow, evidently looking for rats, was being bothered by two gygis terns, which darted at him but not so fiercely as American black-birds would have done.

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We hiked on to the Water-house where we stopped and collected from several trees; then crossed to the cool, shady side of the river and collected there. Lunch with the sons of the American Consul. Later up the road collecting until four o'clock, after which a hard walk to town. Appeared rainy inland. I fear we are in for a wet spell on the mountain.

September 16

Rainy spell threatening, so I spent the day getting oil-cloth covers made for everything,--plants, press, camers, field glasses, bird basket, notebooks, barometer and myself. The boy not arriving early, I did not go into the field as I had planned. It was well, for the plants already collected will be but barely dry enough to put away.

September 17

Bought a supply of groceries and continued preparations for the journey next week. A very severe storm rages elsewhere on the Island according to reports. Here to leeward but light showers prevailed. My pictures this week proved somewhat under exposed. How difficult to get good results here! Time and an open diaphragm are quite necessary with a rapid lens. I must keep notes and learn the country better. The party has dwindled to three, where I hope it remains. That will cut the expense down to about eight hundred francs, one half of which the two will stand.

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September 18

Very sleepy last night and this morning. Spent the day packing up and writing letters. In the afternoon the two men arrived and we spent the evening puttering around getting our stuff packed up.

September 19

Up at four-forty, five minutes ahead of the alarm clock. Tafai has not arrived, nor has the stage, but my clocks may be a little fast. We can pick up two men at Pirae I am hoping. A moonlight night with wind clouds, and as bright a morning, lead me to suspect that we will have good weather. But at Pirae where we had the jitney take us as far through the sugar plantation as he could get for the mud in the road, I found Tuaurai wholly indisposed to strike the trail for the mountain. Leaving our things in a native house at the foot of the Hamuta trail, we returned to town and had breakfast. I left Matete to look after things but he showed up at the hotel about ten o'clock. Moyle took a car out to Papeari, so I rode down here to Faaa to see what the trouble was with Tafai. His wife seems sick and he may not be able to go. If he is able to go, we will not hesitate long for Tuaurae because we can take the Hamuta trail to the Noha diggings visited before and leave a base camp there in the fei while we cut our way up Gautier's trail to the summit. The men are willing, though it is likely to take more than the week. What a job it is to get these natives to do anything! They are so unreliable even when perfectly understood. I must study more

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on the language so as to prevent these mistakes as much as possible.

There were hawks and white gygis terns in the neighborhood of Pirae this morning. The storm of the past two days has made little difference in the height of water in Pirae and Fantana rivers. Reports from around the Island are that rivers are flooded. Clouds dropping light rain are hanging about the mountains, but it cannot be raining very much by the appearance of these two rivers. At Papeete and on out here to Faaa there is beautiful sunshine, a breeze, and only light wind clouds. The natives are very adverse to going forth from the comforts of home during a rainstorm. Once out in the bush, they do not hug either fire or fare but pay no attention to showers. Theirs is an easy life and neither ambitious desire nor reproachful conscience urge them on to duty. The strange part of it is that such a life of indolence we picture as our ideal of heaven.

As I surmised, Tafai's Vahine's sickness had prevented his coming to town yesterday, and furthermore prevents his going at all. So I returned to the road and started to walk out to the Punaruu to see his son Tieho who has just agreed to come in on the stage and carry my load with the help of a friend. Rode to town with the Papenoo stage which I found at Punaauia, in which I found one Leigh H. Irvine, also going to town. He was another disgusted white, as all highly moral whites must be in this dissolute land. My men showed up, and this evening after a little more letter writing and a great deal of fussing Moyle returned in his auto and took us to the house at Pirae, where we slept for the night.

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There were heavy and white Kyala terns in the neighborhood of Tiree this morning. The storm of the past two days has made little difference in the height of water in Tiree and Pentuna rivers. Reports from around the island are that rivers are flooded. Clouds dropping light rain are hanging about the mountains, but it cannot be raining very much by the appearance of these two rivers. At Papeete and on out here to Faaa there is beautiful sunshine, a breeze, and only light wind clouds. The natives are very adverse to going forth from the comforts of home during a rainstorm. Once out in the bush, they do not hug either fire or fare but pay no attention to showers. Theirs is an easy life and neither ambitious desire nor reproachful conscience urge them on to duty. The strange part of it is that such a life of indolence we picture as our ideal of heaven.

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September 20

Up at five and down after Tuaurai while the boys cooked the coffee. All in readiness at seven o'clock to ascend the mountain. We will take the Hamuta trail. Off to a flying start, but the abrupt trail soon put an end to the flight and we settled down to steady climbing. Tuaurai brought along some sugar-cane. He looks a great deal like a man of leisure, as he is carrying less than any of us Popas. The other boys seem to have all the load they can carry and are resting along the trail excessively.

A few wild chickens are crowing in the canyons and ravines below us. As we came up the trail I saw a flock of at least twenty myna birds. They were just above the plantations and in the neighborhood of guavas. Where the trail strikes the Hamuta gorge we again rested. It seems all we are doing is rest. Saw two tropic-birds flying seaward down the gorge. In March there were several here and we obtained two by calling. Another is soaring around the upper gorge. Off the fern ridge and around on the shady side of the slope, where a small flock of red-rumped weaver birds and scattering myna were observed. As we came along the ridge three tropic-birds and two hawks were soaring above the gorge. Candle-nut, bean, and even a mango tree here. It is very difficult to refrain from collecting as we ascend. I am thinking of zonal collecting, which will be of considerable use. It will require a last camp at the lowest water just above here, and at least one day of collecting from here to the sugar-cane.

Ascending the trail up Hamuta canyon, we heard at one

September 30

Up at five and down after breakfast while the boys cooked the coffee. All in readiness at seven o'clock to ascend the mountain. We will take the Ramata trail. Off to a flying start, but the abrupt trail soon put an end to the flight and we settled down to steady climbing. Tuaural brought along some sugar-cane. He looks a great deal like a man of leisure, as he is carrying less than any of us boys. The other boys seem to have all the load they can carry and are resting along the trail occasionally.

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Ascending the trail up Ramata canyon, we heard at one

place the green dove, kingfisher, jungle fowl, and a singing warbler, and the myna of course. We three fellows shove on ahead each lap and the natives come along at their leisure. Very slight showers today and a heavy wind.

At the first water (1700 feet) we three whites stopped and bathed. Then we slept until the natives arrived just before one o'clock, when we lunched upon a can of salmon, bread, butter, and cheese. It was quite sufficient. The cheese is splendid for lunches. We followed up stream to the camp Matete and I occupied last March when descending from the Noha diggings. A poor day's hike but the heavy load made it impossible to travel fast and no one desired a waterless camp. So we stopped at 2050 feet elevation. Showers passed over, lightly sprinkling us. The balloon silk is hardly large enough to cover seven, but six of us are comfortably located and Tuaurai has built himself a lean-to at the side.

At dinner tonight we made the sorrowful discovery that the ten pound tin of biscuits we had carried up here was thoroughly weevil eaten and entirely inedible. Even the dogs would not eat them. It will be a breadless trip, but we have plenty of rice, oatmeal, and beans. A hawk was above camp and roosters crowing a bit towards evening. Matete and Teiho went out to try for one but failed to bring him in.

Barometer 2050 feet. Light showers this evening. Plant collecting is going to be excellent at this season, since many things are in bloom. Everyone in the party is holding up well. K. is odd and M. is slightly hard of hearing, but both are good

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Barometer 3180 feet. Light showers this evening. Plant collecting is going to be excellent at this season, since many things are in bloom. Everyone in the party is holding up well. F. is odd and K. is slightly hard of hearing, but both are good

fellows. The natives are spirited, and Tuarae condescended to ease Teiho's load by carrying the bacon, cheese and sugar. When Matete went to wash the dishes he found our long-lost frying pan handle where he left it last March. The lantern adds a few hours to the day, and, as it straps securely upon my French army pack, it is not the bother it formerly was.

September 21

Rain showers this morning and during the night. Everything dry except rice and beans, which got kicked out of shelter during the night. We were packed quite closely in the bed, and the pup filled up any crack that occurred. Breakfast upon fei, ham and gravy with coffee. Slow in packing; took field up slippery trail at nine. Stopped at orange tree and picked a dozen or two.

A rooster crowing this morning and a hawk somewhere above us. Mynas and weaver birds and kingfisher heard. Sunshine at nine o'clock and a rising barometer. The guide may prefer the trail we followed last November, but personally I think the one Matete and I followed much better because it avoids a very steep grade of fei where the soil is very slippery. Myna birds are chirping here in the orange groves. We happened to camp upon the very last water, only pools being found above. The natives succeeded well in their plans yesterday, for I surmise that they plotted many rests and slow traveling so that we would not get farther than this water. What can be their purpose of delay today I do not know. There is no hurrying a native. They are as

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independent as a hog on ice.

Another pause at the orange ridge where we camped last trip. From there (2400 feet) the trail takes up a very steep climb for four hundred feet through fei and trees to the top of one ridge, crosses the ravine and again ascends abruptly to the point of a fern ridge. Elevation 2950 feet. The grasses here are in seed, fortunately for collecting. A clear day with a high wind,--ideal mountain weather. We are enjoying Moorea, and especially Mona Puta through the glasses from this sunshiny spot.

The unloaded guide, though he condescended to carry a little, shoved on ahead of us considerably. The boys with the loads passed us while we rested. Matete was a long while in coming up. He slipped down while ascending the first fei slope and seems to have injured his knee. Where the trail swung down into the head of a fern ravine we three and Matete stopped for lunch. While eating we heard a rail in the ferns above us. It is nice and cool here, a splendid place for a rest. The pup had considerable difficulty getting along through the ferns, but now that we have eaten, he has as much pep as ever. Just at present he is digging at the base of a tree fern, kicking all manner of dirt over me. But he now thinks it is quite deep enough and cool enough to lie down in. There he is curled with his dirt-besmeared nose resting upon the banked up earth. He is at least all dog, very fond of burying everything.

The load Matete carries has been assumed by us whites until he now has less than I am carrying, and not much more

independent as a hog on ice.

Another pause at the orange ridge where we camped last trip. From there (2400 feet) the trail takes up a very steep climb for four hundred feet through fel and trees to the top of one ridge, crosses the ravine and again ascends abruptly to the point of a fern ridge. Elevation 2900 feet. The grasses here are in seed, fortunately for collecting. A clear day with a high wind,--ideal mountain weather. We are enjoying Moores, and especially Moe Pete through the glasses from this amazing spot.

The unloaded guide, though he condescended to carry a little, shoved on ahead of us considerably. The boys with the loads passed us while we rested. Mateto was a long while in coming up. He slipped down while ascending the first fel slope and seems to have injured his knee. Where the trail swung down into the head of a fern ravine we three and Mateto stopped for lunch. While eating we heard a rail in the ferns above us. It is nice and cool here, a splendid place for a rest. The pup had considerable difficulty getting along through the ferns, but now that we have eaten, he has as much pep as ever. Just at present he is digging at the base of a tree fern, kicking all manner of dirt over me. But he now thinks it is quite damp enough and cool enough to lie down in. There he is curled with his dirt-bemsmeared nose resting upon the banked up earth. He is at least all dog, very fond of burying everything.

The load Mateto carries has been assumed by us while until he now has less than I am carrying, and not much more

than Moyle. R. at the last stop informed me that he had used the water in his canteen to wash his plate this morning. We passed pools of water along the trail at first and he failed to fill it,--very foolish or forgetful. Our packs held us back fearfully, so we three and Matete fell behind and getting hungry ate at one o'clock. Later we passed the others and left their lunch with them. I didn't drop down into a fern ravine soon enough to pick up the trail leaving it. So we fellows had to stop and wait for the guide to come up and show us the trail. Then came that difficult bit of trail alongside the steep slope of the Pirae gorge. I struck out ahead and took a goat trail above the proper one which gave me a great deal of bending over and crawling under tree trunks. The pup here had a very difficult time following me and I was obliged to lift him down over some bad rocks.

I arrived at the fei camp site but shortly before Tuaurae, while the rest were back at the rock ravine, where M. took a short slide down hill. I could hear them cursing, but, as they were so near to camp, I would not send the guide back after them. I took the canteens and hurried down to the stream and brought back some water. The boys soon arrived and finished the water in a hurry. Then with rice pot and canteens I made a second trip. M. went down for a bath. It was so near dark that he took the lantern. He dropped it once and it rolled some thirty or forty feet down hill, stopping just above the high cliff below us. The rice washed, I returned to camp. Tuaurae's dog was baying goats up the left ravine from the water.

than Doyle. K. at the last stop informed me that he had used the water in his canteen to wash his plate this morning. We passed pools of water along the trail at first and he failed to fill it,--very foolish or forgetful. Our packs held us back fearfully, so we three and Kately fell behind and getting hungry ate at one o'clock. Later we passed the others and left their lunch with them. I didn't drop down into a fern ravine soon enough to pick up the trail leaving it. So we fellows had to stop and wait for the guide to come up and show us the trail. Then came that difficult bit of trail alongside the steep slope of the Pikes gorge. I struck out ahead and took a goat trail above the proper one which gave me a great deal of bending over and crawling under tree trunks. The pup here had a very difficult time following me and I was obliged to lift him down over some bad rocks.

I arrived at the lal camp site but shortly before Taurus, while the rest were back at the rock ravine, where K. took a short slide down hill. I could hear them coming, but, as they were so near to camp, I would not send the guide back after them. I took the canteens and hurried down to the stream and brought back some water. The boys soon arrived and finished the water in a hurry. Then with rice pot and canteens I made a second trip. K. went down for a bath. It was so near dark that he took the lantern. He dropped it once and it rolled some thirty or forty feet down hill, stopping just above the high cliff below us. The rice washed, I returned to camp. Taurus's dog was baying some up the left ravine from the water.

With a fire at camp, the rice and coffee put to cook, cups filled, I returned with canteens the third time for water. Tuaurae and Matete had gone goat hunting. At the stream M. had just finished bathing. I heard the dog and goat coming down the left ravine, so I rushed up trail. Not desiring a head-on collision with the goat possessing the uphill advantage, I side-tracked and attempted to catch him as he passed. Missing, I followed closely at the heels of the dog. The goat slipped at the water and there I caught him. Tuaurae and Matete soon arrived, tied a rope about his horns, and started him back to camp. The goat jumped the trail but they elevated him to it again by the rope. "Puaa ahinco" is now staked beside camp. We will leave him here until our return from the summit; then the meat will not spoil. Dinner of rice, beef and coffee.

The boys awakened me to shoot Noha, claiming to have seen four. One came overhead, so I broke out the gun, but after a long wait no more showed up. Their calling has been more frequent than it was last March. Eleven o'clock appears to be a favorable flying time for this species of shearwater. The natives, except Matete,have been sitting beside the fire talking all evening. Hiro has now turned in, but Tuaurae and Teiho still paurau. The birds called on through the night and I believe I heard some early in the morning. After the mountain is ascended Matete and I will camp here and search for their nesting burrows, at the same time collecting plants. Our time will not be wasted certainly, because of the plant collecting. By taking mosses and ferns and liverworts there are any number to be collected.

With a fire at camp, the rice and coffee put to cook, cups filled, I returned with canteens the third time for water. Tsaurus and Ketete had gone goat hunting. At the stream K. had just finished bathing. I heard the dog and goat coming down the left ravine, so I rushed up trail. Not desiring a head-on collision with the goat possessing the uphill advantage, I side-tracked and attempted to catch him as he passed. Missing, I followed closely at the heels of the dog. The goat slipped at the water and there I caught him. Tsaurus and Ketete soon arrived, tied a rope about his horns, and started him back to camp. The goat jumped the trail but they elevated him to it again by the rope. "Tsaa ahimoo" is now staked beside camp. We will leave him here until our return from the summit; then the meat will not spoil. Dinner of rice, beef and coffee.

The boys awakened me to shoot Koba, claiming to have seen four. One came overhead, so I broke out the gun, but after a long wait no more showed up. Their calling has been more frequent than it was last March. Eleven o'clock appears to be a favorable flying time for this species of sheesewater. The native, except Ketete, have been sitting beside the fire talking all evening. Mire has now turned in, but Tsaurus and Telno still pawwaw. The birds called on through the night and I believe I heard some early in the morning. After the mountain is ascended Ketete and I will camp here and search for their nesting burrows, at the same time collecting plants. Our time will not be wasted certainly, because of the plant collecting. By taking masses and ferns and liverworts there are any number to be collected.

September 22

Daylight awoke us and was followed by the deepest rose colored sunrise I ever saw. Matete and I went after water while the boys made a fire. Cut down packs to bare limit, leaving Hiro almost free to help cut the trail. Matete has the dishes and plant press. We fellows have but our equipment and our clothes, but mine is quite heavy even now. The trail Matete and I made up to Gautier's ridge trail was easily followed, goats having used it considerably during our absence. Teiho carries the bedding and food. There was little water in the ravine, so we have carried our canteens full and Hiro carries the large pot full of water for the rice.

Gautier's trail at 4025 feet elevation. Clouds are around the summit. The highest point may be along the ridge to second peak from right or west. Possibility of water in ravine on main mountain. "Maia" is the Tahitian name for the Diadime. "Paia" means cliff.

11:00 A. M. Elevation 4500 feet. Here Matete and I lost heart last March and returned to our camp. We have made the nine hundred feet elevation from camp in three hours, which will mean ten hours of traveling to the summit, or six o'clock; so it is doubtful if we will get much beyond six thousand feet today. The rest will have to be done in the morning. As I plan another trip to this peak for botanical collecting I will not collect from here down to camp this trip. Stops hereafter must be occupied getting specimens in the press. I will leave bundles collected today along the trail to save carrying them higher. I brought no blotters, so all the drying will have to be done at

September 22

Daylight awoke us and was followed by the deepest rose colored sunrise I ever saw. Matete and I went after water while the boys made a fire. Out down packs to bare limit, leaving Nito almost free to help out the trail. Matete has the dishes and plant press. We fellows have but our equipment and our clothes, but mine is quite heavy even now. The trail Matete and I made up to Gautier's ridge trail was easily followed, goats having used it considerably during our absence. Tolho carries the bedding and food. There was little water in the ravine, so we have carried our canteens full and Nito carries the large pot full of water for the rice.

Gautier's trail at 4025 feet elevation. Clouds are around the summit. The highest point may be along the ridge to second peak from right or west. Possibility of water in ravine on main mountain. "Tala" is the Tahitian name for the Diadime. "Tala" means cliff.

11:00 A. M. Elevation 4800 feet. Here Matete and I lost heart last March and returned to our camp. We have made the nine hundred feet elevation from camp in three hours, which will mean ten hours of traveling to the summit, or six o'clock; so it is doubtful if we will get much beyond six thousand feet today. The rest will have to be done in the morning. As I plan another trip to this peak for botanical collecting I will not collect from here down to camp this trip. Stops hereafter must be occupied getting specimens in the press. I will leave undiscollected today along the trail to save carrying them higher. I brought no blotters, so all the drying will have to be done at

our return to the fei camp. Fern brake is quite bothersome to native boys' feet. The guides have hallooed from ahead, so I called to them to stop and build a fire and put the kettle on. Teiho is quite far behind. Well, he can change off with Hiro this afternoon. One hawk is the only bird noted so far.

The mist rolls up from Fantana which presents a marvelous gorge fully four thousand feet below us. The crater-like structure of the Fantana basin is very evident from here. Both valleys are included in the great oval basin which is almost closed just below the forks of the river by the cliffs on either side of the canyon. The ridge which divides the two forks is very narrow indeed, and leads on up to the west end of the summit of Aorai. That is the ridge which forms the shadow of a man's profile just before sunset as seen in September from Hotel Tiare. Teiho is worrying about a rather narrow, knife-edged ridge ahead of us. In fact, it does look worse than anything I've yet climbed. "Rupehu" means fog-cloud.

Elevation 4600 feet. Just before we dip down and go along the narrow knife ridge we find a large, five gallon, iron can of water; it may be stale but it will be fine for cooking,-- a gold mine indeed, which gives us all the drinking we desire. Cooked a pot of rice, a small one of oatmeal, a frying pan of macaroni and cheese, and a can of salmon and cold cocoa completed our lunch. Thank Gautier for this water! We go ahead with stomachs full and three canteens plus the oatmeal can of water.

Everyone is excited about the narrow knife ridge we have ahead of us. Tuaurae and I are almost there. A rope left by

our return to the rest camp. Porn Urco is quite bothersome to native boys' feet. The guides have ballooed from ahead, so I called to them to stop and build a fire and put the kettle on. Telho is quite far behind. Well, he can change off with Siro this afternoon. One hawk is the only bird noted so far.

The mist rolls up from Santana which presents a marvelous view fully four thousand feet below us. The crater-like structure of the Santana basin is very evident from here. Both valleys are included in the great oval basin which is almost closed just below the forks of the river by the cliffs on either side of the canyon. The ridge which divides the two forks is very narrow indeed, and leads on up to the west end of the summit of Aoral. That is the ridge which forms the shadow of a man's profile just before sunset as seen in September from Hotel Tiare. Telho is worrying about a rather narrow, knife-edged ridge ahead of us. In fact, it does look worse than anything I've yet climbed. "Tupsum" means fog-cloud.

Elevation 4000 feet. Just before we dip down and go along the narrow knife ridge we find a large, five gallon, iron can of water; it may be stale but it will be fine for cooking,--- a gold mine indeed, which gives us all the drinking we desire. Cooked a pot of rice, a small one of oatmeal, a frying pan of macaroni and cheese, and a can of salmon and cold cocoa completed our lunch. Thank Gawtier for this water! We go ahead with stomachs full and three canteens plus the oatmeal can of water.

Everyone is excited about the narrow knife ridge we have ahead of us. Tuaurea and I are almost there. A rope left by

Gautier stretches along it. Fantana gorge is full of fog. Pirae clear. The fog raises straight up above the knife divide. The knife edge was none too easily manipulated. Gautier had left a good stout rope hanging down over the forty foot cliff which was not abrupt. Tuaurae led the way and I followed, sending packs and gun up by the rope. My pup, Noha, I carried in the game pocket of my blouse, passing it up to Tuaurae ahead. Then I pulled all the packs up; Matete came next and we hoisted Tuaurae's goat hound. Krauth lost heart and retreated, either to camp where we lunched or to go on back to the fei camp. I told him if he got off the trail, to camp until day after tomorrow. He thought to send his canteen with us, but now he is helpless without knife or canteen. However, as he remarked that tomorrow is fast day, we should worry about his going without food. Teiho is not the mountaineer that his father Tafai is. He appears to be nervous along the knife edge ridges.

Five thousand feet elevation. Commenced collecting by filling hunting blouse with mosses, lichens and ferns from tree trunks for separation in camp tonight if I feel able to work. We cannot reach the summit today, but will camp a few hundred feet farther up. The natives are having great sport about Krauth's turning back. M. holds up well, as do all the boys and the pup. Mist about us in Fantana. Pirae is clear to the sea, where a schooner has been located. What a void is the fog! And what unbelievable depths one can imagine it to be concealing! Pirae gorge must be at least four thousand feet deep from here, but there's a ledge about one thousand down which would stop a fellow

Gautier stretches along it. Yankee Gorge is full of fog. Fire clear. The fog raises straight up above the knife divide. The knife edge was none too easily negotiated. Gautier had left a good stout rope hanging down over the forty foot cliff which was not secure. Tamarez led the way and I followed, carrying packs and gun up by the rope. My pup, Kim, I carried in the game pocket of my blouse, passing it up to Tamarez ahead. Then I hauled all the packs up; Estete came next and we helped Tamarez's goat round. Kranth lost heart and retreated, either to camp where we launched or to go on back to the fal camp. I told him if he got off the trail, to camp until day after tomorrow. He thought to send his canteen with us, but now he is helpless without knife or canteen. However, as he remarked that tomorrow is fast day, we should worry about his going without food. Yelko is not the mountaineer that his father Yafel is. He appears to be nervous along the knife edge ridges.

Five thousand feet elevation. Commenced collecting by filling hunting blouse with moss, lichens and ferns from tree trunks for separation in camp tonight if I feel able to work. We cannot reach the summit today, but will camp a few hundred feet farther up. The natives are having great sport about Kranth's turning back. K. holds up well, as do all the boys and the pup. Mist about us in fantasia. Fire is clear to the sea, where a schooner has been located. What a void is the fog! And what unbelievable depths one can imagine it to be concealing! Fire gorge must be at least four thousand feet deep from here, but there's a ledge about one thousand down which would stop a fellow

from falling to the bottom. Mosses and ferns predominate, the same brush fern making up the bulk of our obstacles. A few shrubs all along the ridge which will require considerable collecting on the down trip. No birds heard or seen since the last hawk this morning. My canteen of coffee with lemon juice in it furnished us a slight refreshment here. The natives did not like the chocolate concoction we made them at noon. Perhaps we should have brought coffee or tea.

Proceeded on till five o'clock, when we found ourselves at an altitude of 5550 feet on the ridge to the right of the Pirae gorge leading in to the mountain above a ravine where I am certain I heard water trickling in the ravine below. We found a rather broad portion of the ridge well moss banked, and there we spread our blankets. The boys turned in beneath the oil silk. We put on all the sweaters we possessed, and then, with two heavy army blankets, succeeded in keeping warm at times, but, as M. said, most damnably uncomfortable. We woke up once to find ourselves fairly off the ridge and supported merely by the bushes growing on the side of the cliff which must be below us, for down there somewhere this morning I heard a Rao shearwater (P. neglecta). Just once last night did I hear the Noha (P. rostrata), so they cannot be nesting very thick at this altitude. Rail heard in the ravine below us in the evening. Too cold to write or work upon plants I gathered towards evening.

September 23

Daylight and very chilly. I can almost imagine that the

from falling to the bottom. Mosses and ferns predominate, the same broad fern making up the bulk of our obstacles. A few mantuba all along the ridge which will require considerable coaxing on the down trip. No birds heard or seen since the last hour this morning. My canteen of coffee with lemon juice in it furnished us a slight refreshment here. The native did not like the chocolate concoction we made them at noon. Perhaps we should have brought coffee or tea.

Proceeded on till five o'clock, when we found ourselves at an altitude of 8880 feet on the ridge to the right of the Pixie gorge leading in to the mountain above a ravine where I am certain I heard water trickling in the ravine below. We found a rather broad portion of the ridge well moss banked, and there we spread our blankets. The boys turned in beneath the oil silk. We put on all the sweaters we possessed, and then, with two heavy army blankets, succeeded in keeping warm at times, but, as K. said, most damnably uncomfortable. We woke up once to find ourselves fairly off the ridge and supported merely by the bushes growing on the side of the cliff which must be below us, for down there somewhere this morning I heard a Kao sheerwater (K. neglecta). Just once last night did I hear the Kona (K. rostrata), so they cannot be nesting very thick at this altitude. Hall heard in the ravine below us in the evening. He said to write or work upon plants I gathered towards evening.

September 29

Daylight and very dully. I can almost imagine that the

heavy dew on blankets, pillows and bush is frost. It was so heavy that the oilcloth above gun and coat collected considerable water. A rail called at length with that slightly trilled, shrill call I have formerly credited to other strange birds. He dwells in the ravine below. A bit of rum in cold coffee went very well this morning. Elevation 5525 feet. Spent the morning after sun rose pressing plants collected last evening, photographing, and eating.

Off for the mountain at nine o'clock. We are well above the light, cumulus clouds this morning. The trail cutters are now ahead searching the ravine where we hope for water before we strike up the remaining thousand feet between us and the summit. How crater-like appears the Fantana valley from here, a great, oval basin, the bottom of which has been cut into three or four prominent ravines. I was correct about the water in the ravine below camp. We had to follow down it but a hundred meters or so to reach the most deliciously cool pools imaginable. So far we have had the very best of luck as to water, not suffering in the least. There may be more than I can collect here in one day; mosses, small ferns, lichens and liverworts I am merely piling into sack, basket, and jacket to carry back to the fei camp for pressing.

We are getting on up the ridge or shoulder. At the present stop we are well above the upper East Fantana waterfall. It is a dandy, and will measure close to the Yosemite for drop, but is not quite so sheer. The further wall of the Punaruu valley shows many cliffs and a number of caves from here. We should make an attempt to reach them for P. neglecta nests and young, and probable swifts. The Fantana-Punaruu trail looks enticing, as there are

heavy dew on blankets, pillows and bunk is frost. It was so heavy that the oilcloth above gun and coat collected considerable water. A trail called at length with that silently trilled, shrill call I have formerly credited to other strange birds. He dwells in the ravine below. A bit of rum in cold coffee went very well this morning. Elevation 5825 feet. Spent the morning after sun rose pressing plants collected last evening, photographing, and eating.

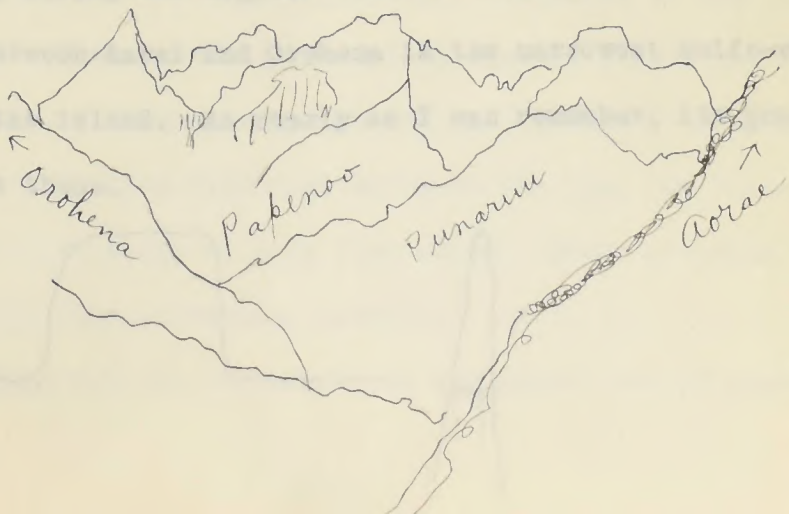
Off for the mountain at nine o'clock. We are well above the light, cumulus clouds this morning. The trail cutters are now ahead searching the ravine where we hope for water before we strike up the remaining thousand feet between us and the summit. Now crater-like appears the Yuntuna valley from here, a great, oval basin, the bottom of which has been cut into three or four prominent ravines. I was correct about the water in the ravine below camp. We had to follow down it but a hundred meters or so to reach the most delightfully cool pools imaginable. So far we have had the very best of luck as to water, not suffering in the least. There may be more than I can collect here in one day; mosses, small ferns, lichens and liverworts I am merely piling into sack, basket, and jacket to carry back to the tel camp for pressing.

We are getting on up the ridge or shoulder. At the present stop we are well above the upper last Yuntuna waterfall. It is a dandy, and will measure close to the Yosemite for drop, but is not quite so sheer. The further wall of the Yuntuna valley shows many cliffs and a number of caves from here. We should make an attempt to reach them for *Z. nuciolia* nests and young, and probable swifts. The Yuntuna-Yunaru trail looks enticing, as there are

caves and cliffs along it. In fact, it appears to cut along the left base of the Diadime. From up here, looking over the hills, they do not appear so green as usual.

Elevation six thousand feet. The mist is rising in the head of Fantana canyon. A hawk comes soaring along the hillside at just our altitude and everyone lays low. He is almost within range when he sees us and banks rapidly. I let go with the left barrel and the hawks drops, fortunately upon the next ridge. Hiro and Matete have gone after him, but the mist comes up and we may not be able to see to direct them. Another is soaring about in the mist, but he will not approach us. The plants so far have differed little from where we camped. The shrubs collected, in places, are scrubby trees. Gautier's trail is perfectly plain and not grown over very much up here. The boys are in the near vicinity of where the hawk landed but do not find him, and report the possibility of his falling over the edge.

At the main ridge we get a glorious view of Orehena across the upper plateau in the head of the canyon of the Vaipapoo, down in which can be counted innumerable waterfalls. One of considerable size drops from the plateau into a large, dark pocket, down which it plunges over innumerable rapids.



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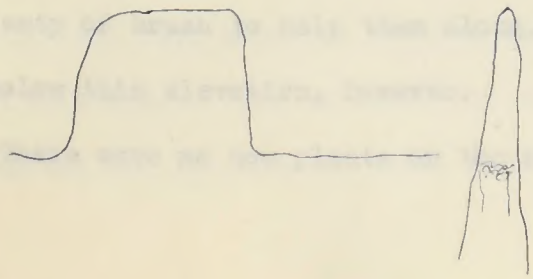
At the main ridge we get a glorious view of Orehons across the upper plateau in the head of the canyon of the Veige-poo, down in which can be counted innumerable waterfalls. One of considerable size drops from the plateau into a large, dark pocket, down which it plunges over innumerable rapids.

From here I see no reason why Orehena should not be accessible. I see no very sheer cliff that could not be circumvented.

We caught up to the guide in a cool, shady ravine where plants that are but bushes along the ridge form trees, just before making last ascent to the series of peaks forming summit of mountain. Collected eight numbers while the boys roasted fern roots to eat for lunch. The summit does not appear to have anything new to offer in either birds or plants. A roll of films and we must run or sleep without blankets tonight.

But we made it in one and a half hours, and so had time to cook dinner before dark. I filled the canteens on the way down by a slight side trip down into the ravine above where we watered this morning. A good, hot dinner felt good. It will not be so cold tonight with the tent tied low. There is much I would like to write about the island from this viewpoint, but, what with cool temperature at nights and collecting in the daytime, it is not possible. Rail are piping but not so common as at Moorea. There is a very interesting, faint rose tint above the clouds to westward just before sunrise. There was little or no color on the fog at sunset. A high wind blowing and slight sprinkling during the night.

Between Aarai and Orehena is the narrowest knife-edged ridge on the island. As nearly as I can remember, its proportions were about these.



Even here I see no reason why Orkneys should not be accessible. I see no very sheer cliff that could not be circumvented.

We sought up to the guide in a cool, shady ravine where plants that are but shades along the ridge form trees. Just before making last descent to the series of peaks forming summit of mountain. Collected eight members while the boys roasted fern roots to eat for lunch. The summit does not appear to have anything new to offer in either birds or plants. A roll of films and we must run or sleep without blankets tonight.

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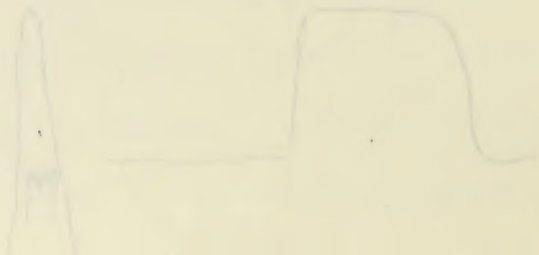

The rock rising above the ridge some hundreds of feet was extremely thin and even in conformation. It heads the valley of Vaipoapoo which consists in these upper portions of a plateau with ravines on either side of it. Between Tetafera and Tahiti peaks are several sharply pyramidal peaks. To eastward of Tahiti stretches a long, deep, broad valley which I should judge to be about Ahoaraa or between there and Punaruu. The gorge of the Punaruu has been cut through the plateau which is level on opposite sides. This plateau apparently was a swell of lava that choked up or welled up in the crater. Vaipoopoo and Ahoaraa are to be added to the other craters of the greater Tahitian volcano. The best view is down Fantana where the river is seen some six thousand feet below the mountain top, the gorge reaching to within a map kilometer of the peak and doubtfully rising seven hundred or a thousand feet. Vaipoopoo is not so bad, but is broader and more evenly timbered. The west fork of Fantana is quite rough with waterfalls, valleys, and peaks. From up here looking down, the evenness of the ridge slopes disappears.

An interesting part of the view was the distant peninsula of Tautira seen between Orehena and Tetufera. The fern ridges of Vairao resemble vast wheat fields. But mists of fog intervened in the view. Orehena certainly appears accessible near the summit. If, as Frisbee says, he and Hall looked down upon Aorae I don't see why they didn't go on up to the top, for there seems to be plenty of brush to help them along. There are some bad cliffs below this elevation, however.

There were no new plants on the summit except a grass

The rock rising above the ridge some hundreds of feet was extremely thin and even in contortation. It heads the valley of Valpoapoo which consists in these upper portions of a plateau with ravines on either side of it. Between Tatafora and Tahiti peaks are several sharply pyramidal peaks. To westward of Tahiti stretches a long, deep, broad valley which I should judge to be about Aburam or between there and Tumarum. The gorge of the Tumarum has been cut through the plateau which is level on opposite sides. This plateau apparently was a swell of lava that choked up or walled up in the crater. Valpoapoo and Aburam are to be added to the other craters of the greater Tahitian volcano. The best view is down Tarbuna where the river is seen some six thousand feet below the mountain top, the gorge receding to within a map kilometer of the peak and dorbtfully rising seven hundred or a thousand feet. Valpoapoo is not so bad, but is broader and more evenly timbered. The west fork of Tarbuna is quite rough with waterfalls, valleys, and peaks. From up here looking down, the evenness of the ridge slopes disappears.

An interesting part of the view was the distant peninsula of Taurite seen between Orebona and Tatafora. The fern ridges of Vairao resemble vast wheat fields. But mists or fog intervened in the view. Orebona certainly appears accessible near the summit. If, as Frisbee says, he and Hall looked down upon Aorea I don't see why they didn't go on up to the top, for there seems to be plenty of brush to help them along. There are some bad cliffs below this elevation, however.

There were no new plants on the summit except a grass

which was not in fruit,--a bunchy, long, fine grass. Everything else we had collected along the route. The ravine wherein we found water near camp should probably be worked more thoroughly than I will have time for this trip, but nothing was noticeable which does not grow in the ravine just above the fei camp. The tree fern zone might be subdivided into a higher and lower belt by a very noticeable little, viny plant that grows amongst the fernbrakes. From camp to the summit one variety seemed to increase in abundance until it predominated. The common fern of the ridges disappeared at 5600 feet and was supplanted by this plant. They might make typical indicators or two belts in the tree fern zone.

The rail and perhaps a few shearwaters and the hawk appear to be the only birds inhabiting this upper country. Some new moths were noticeable, also the little brown butterfly of the mountains. Other insects about as usual. There is no reason to expect a different flora on one mountain than upon another, because the connecting ridges which must have been considerably higher in former ages are still sufficiently high to form highways for plant travel from one mountain to another. However, to the windward might be found a difference because of the more excessive rainfall.

How surprisingly cold one finds it in these mountains! Unfortunately the thermometer was locked up so I could not get it, but it felt very near the freezing point to us trying to sleep on this ridge. The water in the ravine below was below forty degrees and too cold to drink straight down. With the

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