NARRATIVE OF THE KERMADEC ISLANDS EXPEDITION 10/10/66 - 29/1/67

By D. V. MERTON

ABSTRACT

The following is intended only as a relatively brief narrative of the Ornithological Society of New Zealand's 25th Anniversary Expedition to the Kermadec Group.

A general account of the bird life and other more specific papers resulting from ornithological studies undertaken by the expedition will appear in "Notornis" at a later date.

GEOGRAPHY

The Kermadecs are comprised of two large islands and over a dozen small islands. They constitute the most northerly and the only sub-tropical islands within New Zealand's faunal region. Raoul is the major and only habitable island and has an area of 7,260 acres and rises to 1,694 ft. above sea level. Its position is 29° 16′ S. and 117° 56′ W. Cape Brett is the nearest New Zealand landfall, 611 statute miles miles to the south-west; the distance from Auckland is 674 miles, Norfolk Island is about 600 miles due west and Tonga a similar distance to the north.

Macauley, 756 acres, is the second largest island and lies 67 miles south-west of Raoul. Twenty miles south again are Curtis and Cheeseman Islands (128 and 12 acres respectively). All islands are of volcanic origin, Curtis and Raoul being active andesitic volcanoes.

Most of the smaller islands are situated in the Herald Group off the north-east coast of Raoul. The largest is Meyer Island, a little over a mile north-east of Rayner Point, Raoul Island. Meyer is divided into two by a narrow channel which can be waded under favourable conditions at low tide. The larger northern hummock rises to 403 ft., the southern reaches 325 ft. The total area of the two islets is approximately 40 acres.

The fauna and flora of the Kermadecs have a close affinity to those of New Zealand but with a strong sub-tropical element. Edgar, Kinsky and Williams (1965) give a more comprehensive description of Raoul Island together with some of its most fascinating history.

PREPARATION

After an untimely volcanic eruption caused the total evacuation of Raoul Island only two days after our 1964 party had arrived (see account by Edgar, Kinsky & Williams 1965), expedition members were unanimous that the expedition should not be abandoned but rather postponed until seismic activity had subsided. Subsequently the Society's Kermadec Sub-committee successfully recommended to Council that the expedition be relaunched in 1966. One year was considered insufficient for the necessary planning and, in any event, the crater may not have vented all its fury beforehand. As it turned out, however, fears of the latter were unwarranted; the crater, after a series of minor eruptions which resulted in the formation of about a dozen new vents, settled down again and has shown every indication of allowing another ninety years to elapse before stirring again.

[M. F. Soper

Plate I — **Standing (Left to Right):** J. F. Anton, Dr. J. C. Watt, W. Sykes, J. A. Peart
Sitting: Dr. M. F. Soper, W. V. Ward, D. V. Merton, C. R. Veitch, D. E. Crockett

Despite this early decision it was not until mid-1966 that the Secretary for Defence (Navy) was able to confirm that return naval transport would be available. From this date on until sailing from Devonport on 10/11/1966 those taking part had much to do. Insurance was arranged through Lloyds against the unlikely event of emergency evacuation and the necessity to divert an ocean liner and members had to produce certificates of their dental and medical fitness as well as their blood group and anti-tetanus vaccination. All passed these conditions with flying colours, including our most senior member, Mr. Jim Anton, who at retiring age proved to be one of the fittest of us all.

It was unfortunate that only four of the original thirteen members were available. These were David Crockett, Science Advisor to the Wanganui Education Board; John Peart, Science Lecturer, Palmerston North Teachers' Training College; William Sykes, Botanist, Botany Division, D.S.I.R., Christchurch; and myself, a Field Officer of the Wildlife Service, Department of Internal Affairs, Auckland. Other members were Dr. Charles Watt, Entomology Division,, D.S.I.R., Nelson, Senior Scientist; Dr. Mike Soper, Registered Medical Practitioner, from Tapanui; Jim Anton, retired, from Taupo; William Ward, retired, from Nelson, and Richard Veitch, Wildlife Field Officer, from Rotorua. The party of nine was chosen from ten applicants. The duration of the trip proved too long for most. Both Entomology and Botany Divisions, D.S.I.R., were invited to nominate a specialist from their staffs.

As in 1964 the expedition was sponsored wholly by the Society and its members.

Mr. A. Blackburn, the then President, Mr. B. D. Bell and I were appointed by Council as the Kermadec Expedition Sub-committee and I was asked to become executive officer and expedition leader.

The task of planning and organising was lightened considerably when Mr. A. T. Edgar, the Society's Secretary at the time and executive officer and leader of the ill-fated 1964 Expedition, supplied details of formalities and procedures involved and in so doing considerably reduced the preliminary work. The permission of the Director General of Lands to visit the Islands and to make representative collections of plants and animals was first obtained. (The Group is a Reserve for the Preservation of Fauna and Flora.) The Department of Civil Aviation, which controls a small part of Raoul Island and maintains a weather station there, was told of our intending visit and kindly invited us to place our base camp on Low Flat not far from their establishment. The radio telephone link with New Zealand and a host of other services extended to the 1964 Expedition were again offered to us and were most welcome. We greatly appreciated the warm hospitality and co-operation shown us by Francis Dickie, Officer in Charge, and members of the 1966-67 Raoul Island Civil Aviation Expedition. Their kindness contributed directly to the success of our venture.

As I was the only member living in Auckland, the port of departure, there were pitfalls. The purchase and packing of all stores inevitably fell my way. These were sorted into three lots, i.e., Base Camp, Denham Bay Camp, and Meyer Island Camp, and marked accordingly. Most items were first sealed in plastic bags to guard against the very real danger of a wetting while being landed. In

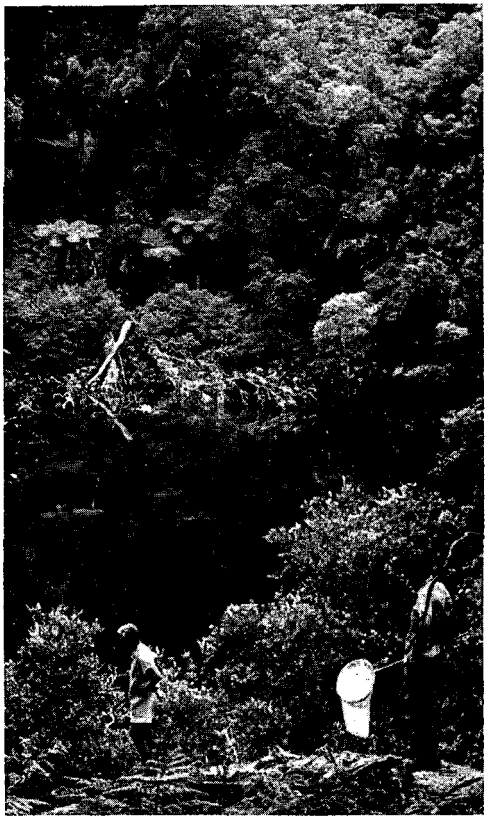

Plate II —

(a) Tui Lake

[D. V. Merton

[D. V. Merton

(b) Devastated ridge, showing damage done by the volcanic eruption of 1964. Note regrowth on some pohutukawa trunks.

the latter stages I was helped by Richard Veitch who, on arrival at Raoul, assumed responsibility for stores and their allocation. Thanks to his devotion to duty stores worked out perfectly despite some potentially heavy-handed cooks!

OUTWARD JOURNEY

H.M.N.Z.S. "Inverell" was loaded on the morning prior to sailing. John Peart and David Crockett were whisked from the Auckland railway station on arrival, and before they had breakfasted, to the Department of Internal Affairs store where a large truck was waiting to be loaded. Thirty minutes later the heavily-laden truck departed for the Naval Base. At the ship's side the load was soon stowed aboard, thanks to the help of many sailors. It was nearly 11 a.m. before two famished ornithologists sat down to a belated breakfast.

At 3 p.m. a small crowd gathered to farewell us and shortly afterwards "Inverell" cast off. For some time the figures of Mr. and Mrs. Ross McKenzie, Mr. and Mrs. Fooks, Mrs. and Fiona Anton and Margaret Merton were discernible on the rapidly diminishing pier.

Telegrams wishing us Bon Voyage from the President, Mr. A. Blackburn, the Secretary Mr. A. T. Edgar, Council Members Dr. R. A. Falla, Mr. and Mrs. Denis McGrath and Mr. B. D. Bell, and members of the earlier expedition, Alan Wright and Peter Child, were received along with many others. Alan wished us luck and hoped that the pot wouldn't boil over this time.

The tedious preparatory stage had ended at last and our adventure had begun. For two and a half days while we were at sea the weather was perfect and with a few exceptions we all proved good sailors. I cannot recall this outward voyage without mentioning "Inverell's" steering motor which, situated just through the bulkhead from our accommodation, sounded for all the world like a pneumatic hammer each time the helm was corrected. Surprisingly enough, this did not bother us after the first few hours. We kept a bird-log during daylight hours and the photographers in the party tried with considerable success to photograph the Wandering Albatrosses and other species which maintained station off "Inverell's" stern.

Each evening two or three of us were invited to pay a social visit to the Commanding Officer, Lieutenant Commander Steward, who, with his whole ship's company, was most hospitable.

On the evening of 12/11/1966 we sighted Curtis Island and later Macauley Island off our starboard bow but our course did not take us close to either.

ARRIVAL

Daylight next morning found us at anchor off Fishing Rock, Raoul Island, and soon afterwards a boat was lowered and unloading began. Most stores and equipment for Meyer Island, including three 44-gallon drums containing drinking water, were taken directly to Meyer; all else was landed at Fishing Rock and taken by truck to the site of our base camp.

With the help of members of the Met. party who manned the crane at Fishing Rock, the flying fox between Fishing Rock and the road-head 300 ft. above and then carted our gear by truck to camp, what would have otherwise taken days was accomplished in hours.

[D. V. Merton

Plate III — (a) Mudflats at eastern end of Blue Lake, a haunt of migrating waders.

[D. V. Merton

(b) View of crater from near summit of Mt. Prospect. Green Lake in foreground and Blue Lake behind.

Weather generally throughout our stay was good although the seasonally-prevailing north-easterly winds did not give us the most favourable seas for travel amongst the Herald Islets or landing on North Beach. A little rain fell during the early stages, and towards the end, very humid conditions were followed by torrential rains which on Meyer washed out a number of David's nesting Wedge-tailed Shearwaters (*Puffinus pacificus pacificus*). The extreme humidity caused numerous problems, not the least of which concerned Bill Syke's plant presses in which leaves of almost every plant encountered on the island were in the process of being pressed and dried. The added moisture had the disturbing effect of causing some of Bill's specimens to *grow* despite all efforts to dry them out.

With our camp established in a well-drained and sheltered position not far from North Beach and in the shade of a grove of Pohutukawa, we at once set about establishing satellite camps at Denham Bay and on North Meyer Islet.

DENHAM BAY

Our first portage from Low Flat to Denham Bay will not be remembered for its fast time but rather for the quantities of sweat we lost. The track climbs over 1000 ft. to skirt the western rim of the crater before descending the sheer cliffs of Denham Bay. When negotiating this part of the track we could not but marvel at the work put into its construction, for it has been hewn with pick and shovel out of solid rock. A credit to the Niue Islanders who earlier this century left their mark on Raoul Island in so many ways.

Before long John Peart was well installed in his camp and, accompanied by Richard Veitch, had begun working on the Sooty Tern (*Sterna fuscata*) colony, where laying had not yet begun.

MEYER ISLET

We had been told that the Denham Bay surf was invariably heavy and dangerous, but we soon found that during our stay at least, there was hardly a day went by when a boat could not have landed with ease and safety. The northern coast, however, with its prevailing on-shore summer winds was not so amiable and the launching of our 12ft. 6in. dinghy from North Beach never failed to create some apprehension. The establishment of a camp on Meyer, then, was not without its difficulties. During our numerous landings and departures on North Beach on no occasion did we tip out or encounter real trouble although the often substantial quantities of water shipped soon became commonplace.

It was not until 19 November that the sea abated enough to allow a crossing to Meyer. Mike and Don took the first load across. Don then returned for a second load while Mike set about erecting camp. The perfect setting for a permanent camp was found on North Meyer Islet just above a small sheltered and almost all-weather boat harbour, both being rare attributes of an island of this size. With very little work a level site was cleared for the 15 x 10 tent.

By the time a second load had been landed by Richard and Don the weather had deteriorated and the sea was rising. It was not until five days later that the ferrying of gear could be continued,

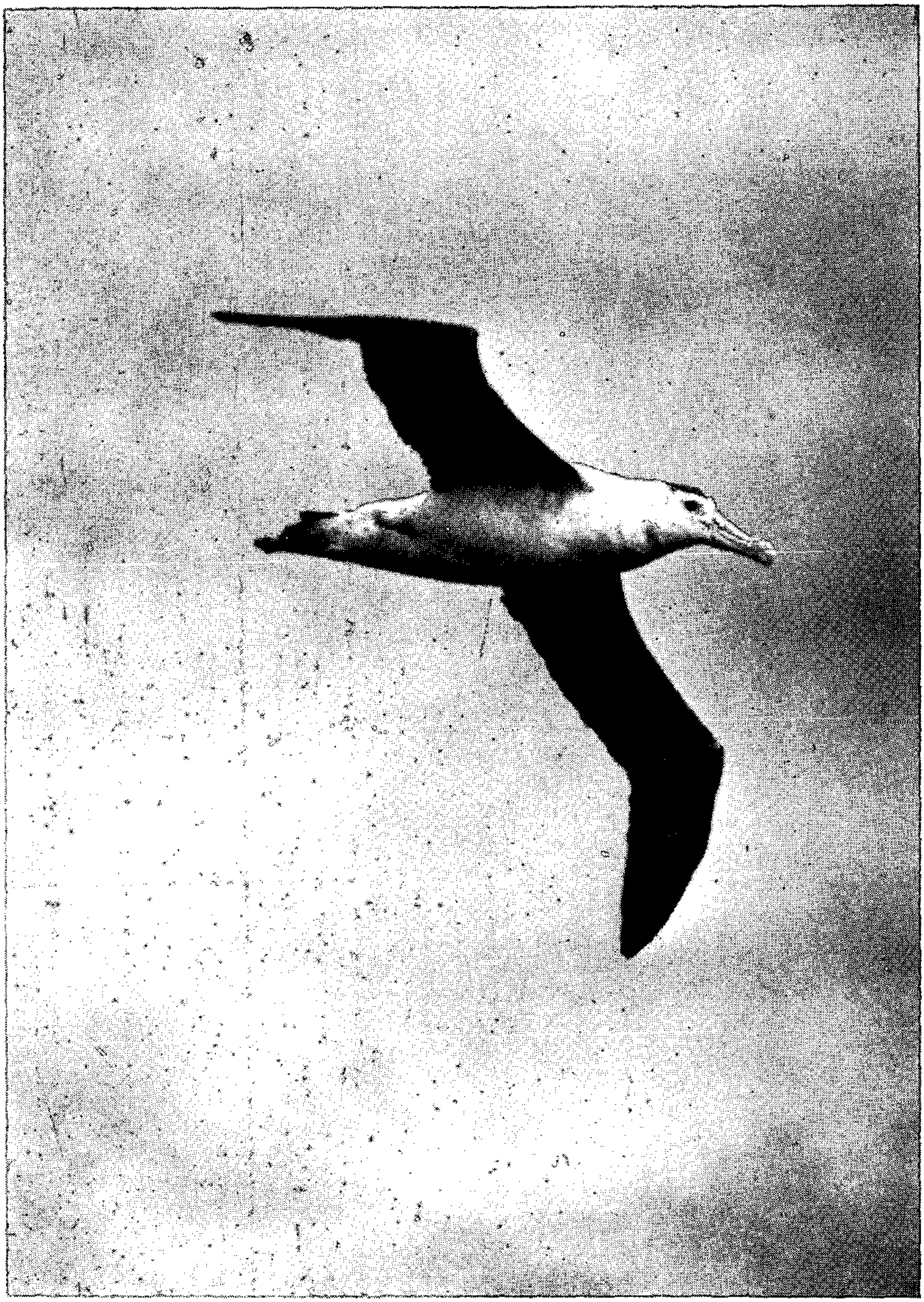

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Plate IV — Sub-adult Wandering Albatross **(Diomedea exulans)**, summering in Northern New Zealand waters.

but the three thus marooned made good use of the involuntary stay even though some heavy rain fell. The fact that the canned meat destined for Meyer was still on Raoul, and that salmon was the only substitute available was of little account. The fresh fish caught was hardly a change. Our radio telephone was working well so that we had daily communication with Raoul and this continued throughout Meyer's occupation, a considerable comfort to all concerned.

RAOUL ISLAND

On the following day Bill Ward and David replaced Richard and Don on Meyer while those at base camp prepared for the first of a number of walk-abouts to explore the more remote parts of the mainland. Raoul Island is poorly watered especially now that the water of the two large crater lakes is polluted (a result of the volcanic activity two years earlier) and so sufficient water for our needs had to be carried. The length of time away from a water supply was therefore limited to the amount of water we could carry. This generally lasted for about three days. While traversing Devastated Ridge which separates Blue and Green Lakes, we were amazed to find plants such as sweet william, carnations, carrots, turnips, tomatoes, radish, rye grass and clover growing in sheltered places among the eruption-killed pohutukawas on the bare volcanic pumice. This was enough to make any botanist give up, but the problem of how they came to be growing in such an unlikely place was solved by Tony Blake the Met. station farm manager, who was spending his second successive year on Raoul. He explained that the 1965/66 Met. party had planted them to brighten up the volcano scarred crater area and to provide nourishment for goat-hunting parties!

One would expect that the "going" on Raoul would be easy with so many goats to open up the undergrowth but such was not the case. The forest floor was often littered with windfalls (a result of the occasional hurricane) through which a vigorous growth of the unpalatable Aroid (*Alocasia macrorrhiza*) and *Pteris comans* fern had grown. The goats had formed tracks beneath this effective barrier which were, of course, of little use to a man with a pack. This, combined with Raoul's comparatively high temperatures and humidity made the going slow and arduous. However, by the end of our stay there were few parts of Raoul which we had not covered. These walk-abouts invariably ended in the grove where an almost inexhaustible supply of the most delicious oranges grew.

MAMMALS

The biggest biological disappointment of all was Raoul Island itself where the introduction of goats, cats, and more recently, mice and Norway rats has caused dramatic changes in the island's ecology. For this very reason it was important that the now impoverished native bird fauna of Raoul receive our full attention. Goats, cats and rats were found throughout the island but the mice were mainly confined to the Met. station farm.

The goats are alleged to have been introduced in 1842 from Samoa by a Mr. Baker, one of the earliest settlers. They have played a major role in modifying the island's vegetation so that today the

[M. F. Soper

Plate V — Young Black-browed Mollymawk **(Diomedea melanophris).** Note the dusky underwing and well-marked collar.

less palatable species alone are regenerating successfully. Seedlings of the more palatable endemic five-finger, mahoe, tree ferns, *Homolanthus,* tutu, karo, nikau, *Asplenium, Blechnum* and even pohutukawa are all heavily browsed and regenerate only in inaccessible places such as on cliff faces or as epiphytes. The endemic Hebe was not found and has possibly gone completely.

In their efforts to obtain foliage and epiphytes, goats often climbed sloping pohutukawa trunks and limbs so that it was not unusual to find these "arboreal" animals forty feet or more above the ground. The aroid mentioned earlier was introduced by the settlers for food and is, unfortunately, one of the most successful introduced species. It has spread to almost all parts of Raoul, often forming dense stands of up to seven feet high, and also occurs on both Meyer Islets. Tui Lake, a tiny crater lake previously surrounded by tree ferns, was once said to be the most beautiful place on Raoul. Today, however, few tree ferns remain and the edges are choked with aroid. A certain member of our party in whose botanical knowledge we had the utmost faith assured us that the aroid, now so common on Raoul, bore an edible tuber, and offered to prepare some for us to try. After much boiling and changing of water they were duly dished up but, alas, one taste was more than enough. The first impression was of a rather tasteless waxy potato but this was followed almost immediately by the sensation of a thousand hypodermic needles piercing one's tonsils. This agony continued for up to ten minutes despite all efforts to diminish it. The tongue and mouth then became partially paralysed, but it was many more minutes before we recovered and considerably longer before our faith was again restored in our botanist. An admission from the expert that he had not cooked the tubers for long enough was little consolation.

Rats were to be found over all parts of Raoul and had an almost universal and unlimited food supply in the nikau fruit. As one would expect, they made good use of Sooty Tern eggs at the two large colonies; and John, who studied the Denham Bay colony, recorded interesting details of rat predation within the confines of his study areas. In a single night 46 eggs were taken in a small area and over a period many hundreds were lost, some sub-colonies being completely wiped out.

Our trapping confirmed the continued existence of Kiore (*Rattus exulans*), the last previously recorded being in 1944 (Watson 1956 unpublished). Of 19 rats we collected, 8 were Kiores. No obvious pattern of distribution was apparent, both Kiores and Norway Rats being widespread.

BIRDLIFE

Native bird life on Raoul was most disappointing. It was certainly a far cry from 1908 when Oliver and Iredale spent 10 months ashore. For instance, these writers recorded Kermadec Petrel (*Pterodroma neglecta*) nesting in tens of thousands. Indeed the young, known locally as "boobies," were harvested in large numbers, e.g., 12,000 in 1889 (Cheeseman 1891) by the settlers. The species bred on the surface at a density of 800 nests per half acre, early this century, but during our stay evidence of only two nests could be found. The extraordinarily placid nature of these birds would make the Kermadec Petrel most

vulnerable to attack by cats, but it is apparently only since the arrival of Norway Rats in about 1921 that its numbers on the main island have declined spectacularly.

Both Wedge-tailed Shearwater and Black-winged Petrel (*Pterodroma hypoleuca nigripennis*) were attempting to breed on Raoul in the face of heavy predation by cats. At d'Arcy Point, previously one of Raoul Island's major Wedge-tailed Shearwater colonies, only twenty occupied burrows could be found amongst the many hundreds of unoccupied burrows, and the remains of 46 freshly eaten shearwaters. We could find no evidence that Black-winged Petrels were breeding successfully on Raoul. The large number of cat-eaten remains indicates that these small petrels were attempting to breed but that they were taken as soon as they landed. Nearby on Meyer, however, the burrow density was as great as 22 per 10 sq, metre plot.

The abundance of sign found indicates that cats are widespread and plentiful on Raoul. During his seven months' stay in 1944 Sorensen accounted for 92 (Watson 1956 unpublished) but apparently made little impression upon the island's population.

Despite our efforts to locate the rare endemic Sunday Island Petrel (*Pterodroma externa cervicalis*), which was known to breed in small numbers high on Raoul Island earlier this century, none was found. Bill Sykes did, however, find a storm wreck of this species on Bell's Beach, which proves that this striking petrel still exists.

A rather unexpected discovery was made when the cat-eaten remains of three nestling Kermadec Allied Shearwater (*Puffinus assimilis kermadecensis*) were found on Rayner Point. The species has never been recorded as breeding on Raoul although it is known to breed on most other islands in the group.

A second large breeding colony of Sooty Terns was discovered along the southern coast of Hutchinson Bluff. It was of a similar size to the well known Denham Bay colony, i.e., about forty thousand nests. Other much smaller colonies were encountered on most of the Herald Islets.

On the exposed cliffs of Smith Bluff, Grey Ternlets (*Procelsterna cerulea albivitta*) were found to have nested. About 50 birds were counted roosting in pockholes high on the Bluff but the remnants of 81 eaten by cats were found beneath. A large percentage of these were nestlings and juveniles. Grey ternlets have not previously been recorded breeding on Raoul although they breed in numbers on other islands in the group.

Kermadec Parakeets (*Cyanoramphus novaezelandiae cyanurus*) were once plentiful on Raoul but apparently vanished soon after the arrival of cats. The only evidence of them that we saw was chewed remains of one on Rayner Point. This is the nearest Raoul Island landfall to Meyer, about one mile distant, where parakeets are plentiful. This bird was most likely a new arrival from Meyer.

The variety of native bush birds is very limited. It consists of Tui (*Prosthemadera novaeseelandiae*), Parakeets, Kingfishers (*Halcyon sancta*) and the two Cuckoos. The Long-tailed (*Eudynamis taitensis*) is present the year round but the Shining (*Chalcites lucidus*) has seldom been reported. White-eyes (*Zosterops lateralis*), too, are

occasionally recorded. With such a meagre representation one would expect a great number of ecological niches to remain vacant and one of the most obvious was that of the flycatcher. It was therefore not surprising to find the Tui occupying this niche and behaving like a Fantail flitting amongst or above the foliage aerially feeding; or on the ground feeding amongst litter after the manner of a robin. Admittedly, such behaviour is not unknown in New Zealand but its occurrence at Raoul was much more frequent than on Hen Island for example. (Merton 1966).

It seems hard to imagine that any one from New Zealand would ever get excited over seeing a Black-backed Gull (*Larus dominicanus*), but the sighting of one at Denham Bay caused as much excitement as some rare vagrant would in New Zealand. At the Kermadecs this gull is a rare vagrant and our sighting was apparently the first made there.

Another small gull seen at a distance at Denham Bay was thought to have been a juvenile Red-billed Gull (*L. novaehollandiae*). The only other small gulls known from the Kermadecs were collected and are in the Otago Museum and bear the name (*Beruchigavia jamesonii*), but according to Gurr (Sorenson 1964) these may well be (*L. gunni*) from Tasmania.

The Spotless Crake (*Porzana tabuensis plumbea*) was recorded only on the Meyer Islets, where it was plentiful. Two nests were found, one unoccupied and one with chicks. The last recorded sighting of a Spotless Crake at the Kermadecs, apart from those I saw on a brief visit to Meyer during the 1964 expedition, was one seen by Lindsay (1929) on Meyer.

The eruption of 1964 has resulted in an expanse of open mud flats at the eastern end of Blue Lake which was used by both feeding and roosting waders. Depending upon the wind direction and rainfall, the waters of Blue Lake encroached or receded irregularly but on no occasion were the mud flats completely submerged and so a small mixed flock of waders was in constant attendance. Golden Plover (*Charadrius dominicus fulvus*) were most plentiful and their numbers varied from 12 to 34. Other species recorded were up to 9 Turnstones (*Arenaria interpres interpres*); up to 6 Eastern Bar-tailed Godwits (*Limosa lapponica baueri*); and 2 Asiatic Whimbrels (*Numenius phaeopus variegatus*), one of which was collected. Apart from one seen on Meyer in 1964 these appear to be the first recorded since Oliver collected one in 1908. Wandering Tattler (*Heterosceelus incanus incanus*) were commonly met with along the coast of Raoul and most islets and rock stacks offshore. The only other record of this species appears to be a specimen collected by W. S. Bell in 1913 (Oliver, 1930). The dried remains of a Knot (*Calidris canutus*) found on the Blue Lake mudflats seems to be the first report of this species in the Kermadecs since Oliver (1912) recorded one taken in Denham Bay in 1910. The only cmpletely new record for the Kermadecs was the sighting of a Grey Plover (*Charadrius squatarola*) on the Meyer Islet rock shelf by David and Jim.

The common land birds of Raoul are the European Starling (*Sturnus vulgaris*), Blackbird (*Turdus merula*), Thrush (*T. musicus*) and Yellowhammer (*Emberiza citrinella*). These are all self-introduced.

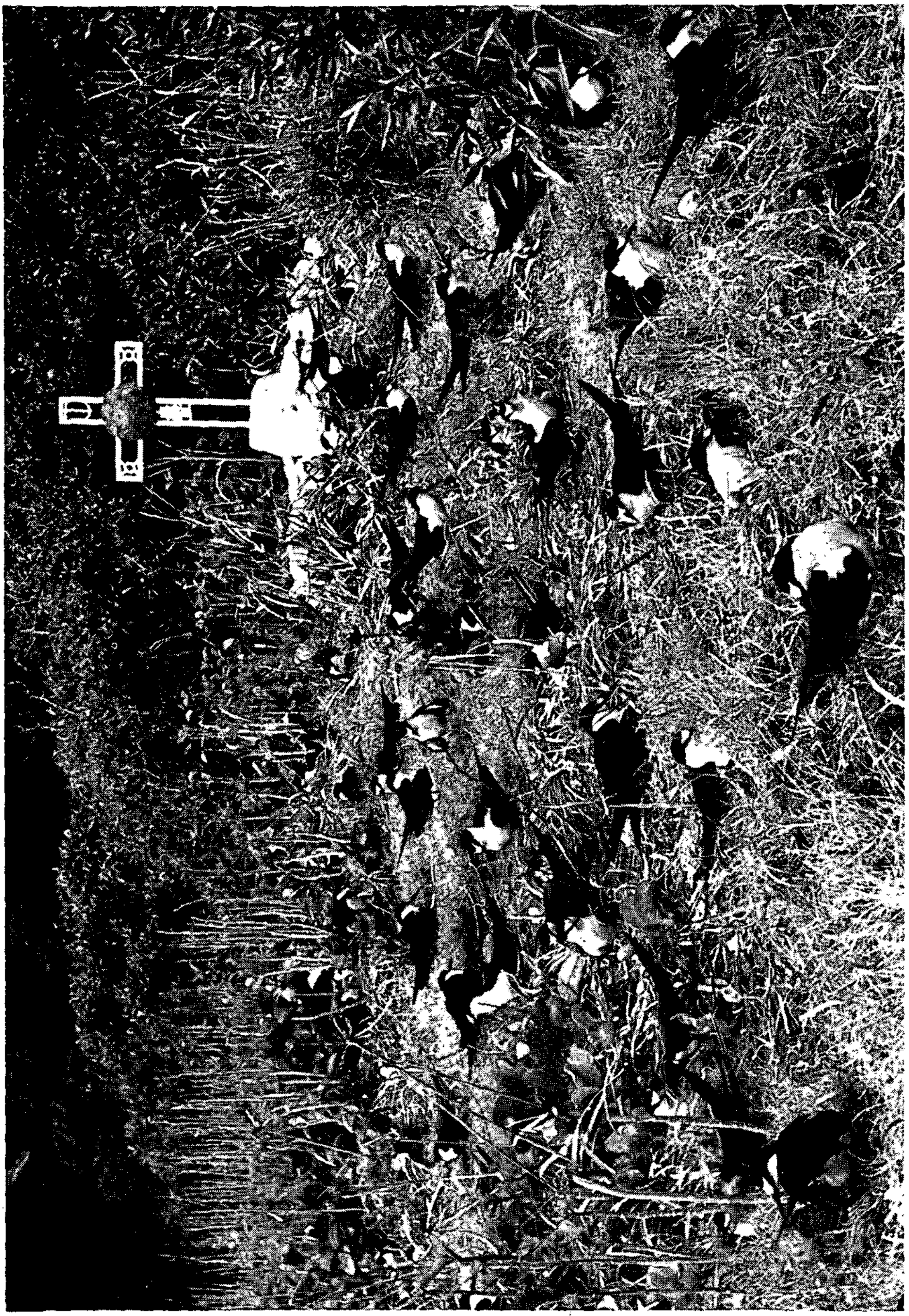

Plate VI — Sooty Terns **(Sterna fuscata)** nesting at the grave of Fleetwood Denham in Denham Bay. [M. F. Soper

presumably from New Zealand (Williams 1953). By far the most numerous was the Starling, which was seen feeding in large flocks upon the prolific insect life produced in the parts of the crater disturbed by the 1964 eruption, especially at the eastern end of Blue Lake. The seventy odd acres of pasture comprising the Met. station farm also proved attractive feeding areas for this species, large numbers of which were seen to cross to Meyer each evening to roost.

The biological highlight of the trip was, without doubt, the Meyer Islets which must be amongst the most fascinating unspoiled bird islands to be found in the world today. There are few parts not being used for nesting by at least one of the fourteen species we found here. Burrowing petrels were beneath the surface, Kermadec Petrels nested upon it. White-capped Noddies' (*Anous tenuirostris minutus*) nests festooned the branches above and cliff edges were occupied by Grey Ternlets and Red-tailed Tropic Birds (*Phaethon rubricauda roseotincta*). Other members of the expedition had good reason then to be envious of Jim and David, who spent nine successive weeks ashore on north Meyer Islet, David studying Wedge-tailed Shearwater and Jim the Kermadec and Black-winged Petrels. Jim's study programme involved recording the daily fluctuations in weight of Kermadec Petrel chicks, an activity which earned for him the title of 'Plunket Nurse Anton."

All other (five) islets comprising the Herald group were visited, some of them twice, and they proved of outstanding interest but none had quite the variety and number of birds to be found on Meyer.

A feature of these islands was the way in which the petrels and shearwaters would come and go during daylight as well as by night and so their activity and calling was continuous. This might well be a result of the apparent virtual absence of avian predators from the Kermadec group.

Of special interest were the parasitic habits of the land crab (*Geograpsus gayi*), which on Meyer often lived in shallow burrows near a Ternlet's nest. The crab, which apparently fed largely upon the food dropped by the parent bird, while feeding the chick, was sometimes twice the size of the chick. However, on no occasion did the crabs appear to have ulterior motives. On the other hand, dead chicks of all species were devoured by these crabs.

Sharks were plentiful but it was not until a day when off Smith Bluff that their potential danger was brought home to us. The fin of a large shark appeared and described a circle around us at little more than an oar's length. The dinghy suddenly seemed very small and the land a long way off.

During the latter stages of our stay large green turtles (*Chelone mydas*) were commonly seen feeding just beyond the breaker line. Once, while swimming around an obstacle en route to Smith Bluff, we noticed a turtle very close in but thought no more of it until Bill Sykes, who admits that he is no swimmer, was caught in the surge and subsequently ran "aground" on the turtle's shell! Needless to say this chance meeting was short lived.

Plate VII — Don Merton and Dick Veitch measuring cat-killed Black-winged Petrels (**Pterodroma nigripennis**) on Raoul Island. [M. F. Soper

FESTIVE SEASON

Time passed rapidly and before we knew it Christmas was upon us. Francis Dickie and his team of nine specialists showed us their typical hospitality by inviting us to attend a Christmas Eve barbecue near the Met. Hostel. Such social occasions were most enjoyable and the ample supply of fresh meat was a welcome change to our basic diet of "bully beef," goat meat and trail biscuits.

On Christmas Day, Richard, who had already displayed considerable talent as a camp cook, produced from the camp oven roast kid fit for a king. Someone was heard to ask, "Who would eat mutton when there are goats like this about?" This, together with Mrs. Hetty McKenzie's Christmas pudding, complete with coins, given to us just prior to sailing, made the occasion a most happy and memorable one. The table had been decorated with the blooms of wild gladioli and pohutukawa and we dined by candlelight.

It was about this time that "Snowball," the Met. staff's pet goat, disappeared. Needless to say we were suspect Number One and in spite of all our protestations of innocence we never did convince Francis and his team we were not guilty. Snowball was never heard of again.

Christmas greetings were received from the President, Mr. A. Blackburn, Vice-President, Dr. Williams and his wife, the Secretary, Mr. A. T. Edgar, Treasurer, Mr. H. R. McKenzie, and his wife and Council member, Mr. N. B. McKenzie and Hawkes Bay members. The District Officer, Internal Affairs Department, Auckland, Mr. E. Burns, sent greetings and hoped that our Christmas goat was tender. Other messages were received from Murray Williams of the Wildlife Service who advised us against eating Sooty Terns for Christmas dinner and from Margaret Merton.

On New Year's Eve we entertained the Met. team at our base camp, Richard again excelling himself as chef. The goat meat and the apple pie that followed were excellent. Charles displayed unsuspected talents when he concocted a bucketful of the most delicious punch. He never did disclose the recipe although we did hear that it began, "take 200 oranges . . . . !"

No record of our experiences on Raoul Island would be complete without reference to the flies which rejoiced in our company. These came in all sizes but all were most friendly. Of particular note were the stable flies, a biting variety, which were apparently a recent arrival from New Zealand, having accompanied a young bull brought to the island. They had found optimum conditions on Raoul and had increased accordingly.

On Meyer a very vicious variety of brackish water mosquito abounded but these were not encountered on Raoul, not even at Denham Bay where the camp was sited at the edge of a swamp.

DEPARTURE

Being so busy and working long hours, we hardly noticed the time slipping by until one day in mid-January a message was received stating that H.M.N.Z.S. "Kaimai" would be at Raoul ready to embark our party at 06.00 hrs. on 27 January. The end was in sight. The prospect of returning to New Zealand was met with mixed feelings.

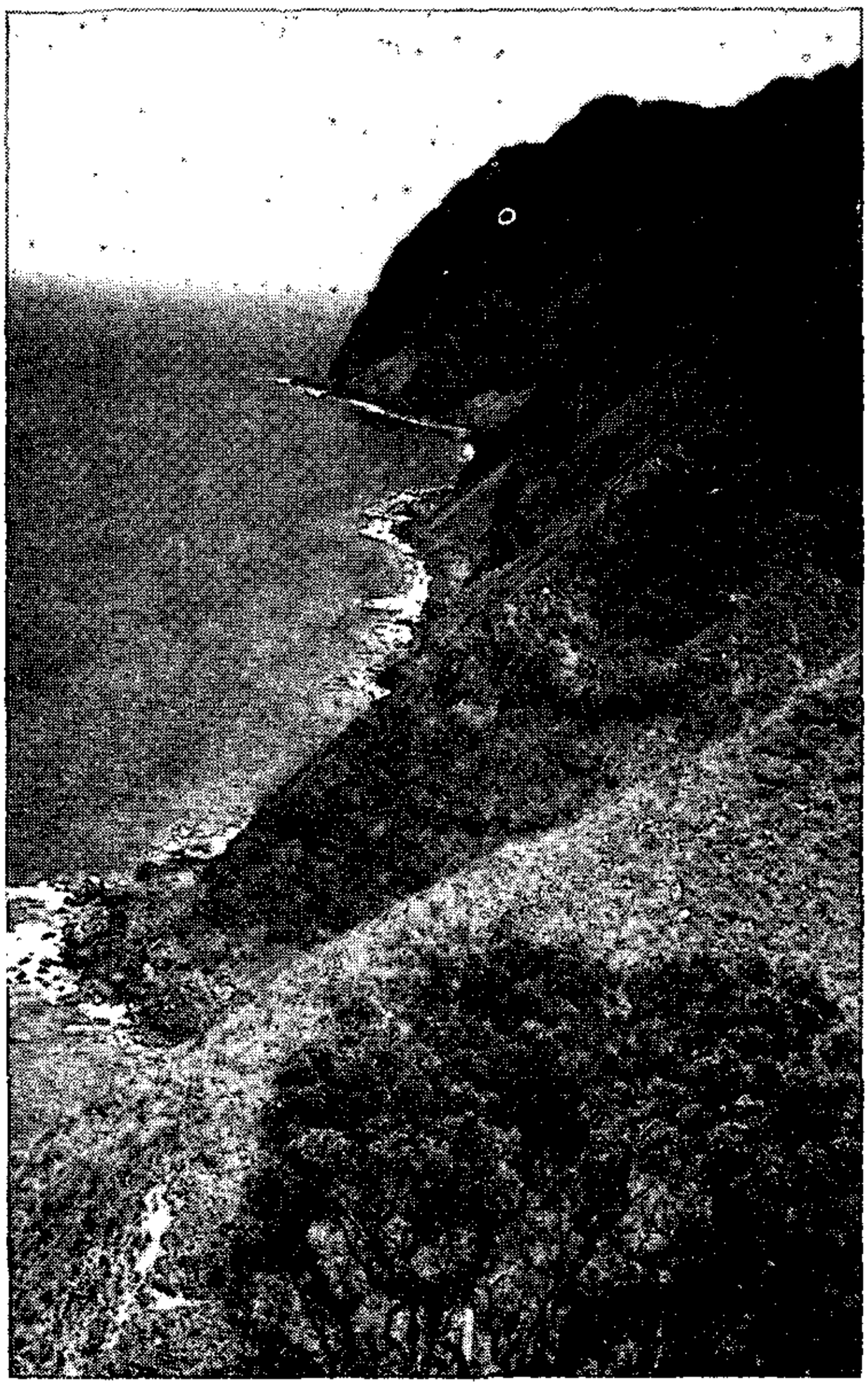

Plate VIII — View from D'Arcy Point towards Smith's Bluff, showing the coast where the Columbia River was wrecked in 1921 and where, presumably, Norway Rats got ashore. Wreckage thought to have been from this ship was found by the 1966-67 party.

While everybody was eager to be reunited with his family, all were a trifle sorry at having to leave the projects in which they were so engrossed and the peaceful setting of the Kermadecs.

On 19 January Richard and Don crossed to Meyer and together with David and Jim began dismantling and packing the camp, and on the following day everything was ferried back to Fishing Rock. Despite an exceptionally high tide and big ocean swell, all personnel and gear were landed dry at Fishing Rock.

All hands, including several of the C.A.A. staff, were at Fishing Rock to help unload the dinghy by means of the boom. The highlight of the operation came when Charles, who was hauling on a rope swinging the boom with his back to the sea, called down to the occupants of the pitching dinghy, "I'm glad it's you and not me." Only seconds later a huge swell broke over the landing platform and nearly carried the unsuspecting Charles away. The dinghy rode it with ease but when all had subsided the now sodden Charles heard his late remark echoed back to him by the smug pair in the dinghy below.

Meyer Island was left as we had found it with all traces of human occupation meticulously removed.

On 24 January the Denham Bay camp was dismantled and packed back over the saddle to Low Flat leaving the " fierce unrelenting surf " lapping gently on the shore.

By the night of 26 January everything but personal effects had been taken to Fishing Rock ready for loading. The Met. staff kindly fed and housed us at their hostel that night and so we were able to begin loading without delay early next morning. The weather was favourable and the seas slight so the task was soon accomplished. As we were being swung from the shore to the dinghy in a large wicker basket, members were, in traditional style, dunked in the tide. Not an unpleasant experience after such hot work.

Like the outward trip the run home was made under ideal conditions and excellent time. We were disappointed, however, at not having an opportunity to land or have a closer look at Macauley or Curtis Islands, as we passed 15 miles to the west.

ARRIVAL HOME

The particularly fast time we made resulted in an unscheduled early arrival back at " Philomel " and upset the plans of those relations and friends who had intended to meet us. However, it was not long before Mr. Archie Blackburn, Mr. and Mrs. Ross McKenzie, Mr. and Richard Sibson, Mr. and Mrs. Watt, Mrs. and Fiona Anton, Margaret Merton, Ruth Crockett, Mr. and Mrs. Bysouth and others arrived to welcome us home. We were also met by two Port Agriculture Inspectors who, after some discussion, seized our cases of specimens as we did not have the necessary permit to " import " them. Botanical collections were spared from a similar fate only after much hard talking by Bill Sykes and others. Several days later after the necessary permit had been arranged our specimens were released.

Gear was then taken by truck to the Department of Internal Affairs' city store for sorting before being consigned to its various destinations, a few days later, our arrival home having coincided with Auckland's anniversary holiday and so business premises were closed.

Expedition members then dispersed bringing to an end a most successful and enjoyable expedition.

In closing I would like to express the appreciation and thanks of expedition members and of myself to those who made this venture possible. Foremost amongst these are the Royal New Zealand Navy, the Department of Lands and Survey, the many sponsor members within the Society and the Civil Aviation Administration whose scientific team on Raoul contributed so much to the enjoyment and success of our visit.

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FOLLOWING IS A SUMMARY OF SOME OF THE WORK ACCOMPLISHED

1. General account of bird life. D.V.M.
2. Population and breeding biology study of Sooty Tern. J.A.P.
3. Distribution and breeding biology study of Wedge-tailed Shearwater. D.E.C.
4. Distribution and breeding biology of Grey Ternlet, White-capped Noddy and observations on behaviour of Kermadec Parakeet and Spotless Crake. M.F.S.
5. Foods and feeding stations of some native bush birds. D.V.M.
6. Bird collection and taxidermy. D.V.M., C.R.V. and D.E.C. (41 skins of 13 species were obtained).
7. Distribution and habits of European passerines. C.R.V.
8. Notes on introduced mammals (on behalf of Wildlife Service, Department of Internal Affairs). D.V.M. and C.R.V.
9. Goats and their effects upon Raoul Island's vegetation. W.R.S.
10. Census and notes on waders and migrants. J.A.P.
11. Bird banding (on behalf of Wildlife Service).
    A total of 5579 birds of 15 species was banded. Many of these species had never previously been banded in the New Zealand area. Only one recapture was made, a Red-tailed Tropic-bird. It had been banded six years earlier as a breeding adult when it nested below the flagstaff on Fleetwood Bluff, Raoul Island. When recaptured it was incubating an egg in a nest on South Meyer Islet.
12. O.S.N.Z. recording system, beach patrol and nest record cards. J.F.A. The measurements of several hundred birds representing most of the Kermadec species were recorded.
13. Notes on the distribution, status and breeding biology of Black-winged and Kermadec Petrels. J.F.A.
14. Entomology (on behalf of Entomology Division, D.S.I.R., Nelson) with particular reference to arthropod inhabitants of birds' nests and burrows and bird and animal ectoparasites. Identification of gut contents of insectivorous birds. J.C.W.
15. Botany (on behalf of Botany Division, D.S.I.R., Christchurch) surveys of Raoul and adjacent islets. W.R.S.
16. Still photography. M.F.S.
17. 16 mm. movie colour film of expedition activity. W.V.W. (It is hoped that copies will soon be available for circulation.)
18. Sound recording. W.V.W. High fidelity recordings were obtained of 15 Kermadec species.
19. Other miscellaneous material was collected for the Dominion Museum and a number of research workers. This included 49 birds eggs of 11 species, a number of bird skeletons, seashells, petrel tissues, fat and stomach oil, goat stomachs, cat stomachs and droppings, and tissues from Starlings for detection of residual poisons if any.