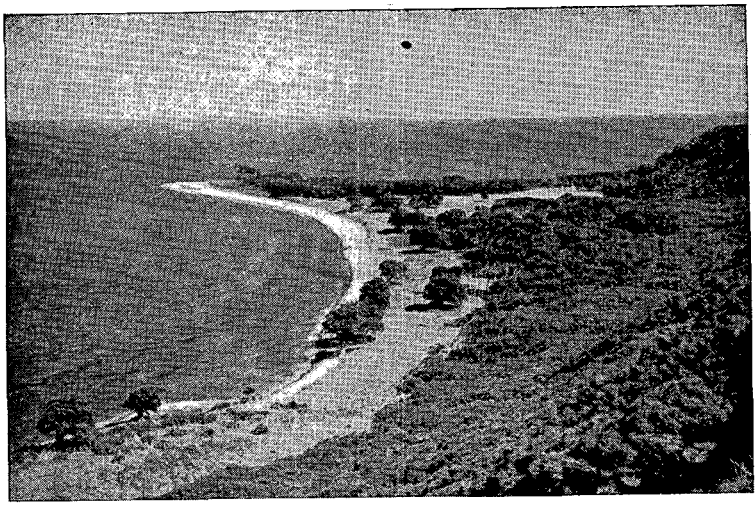


Photo: W. M. Hamilton

THE HOMESTEAD FLAT AND BOULDER BANK FROM THE EAST, LITTLE BARRIER ISLAND.

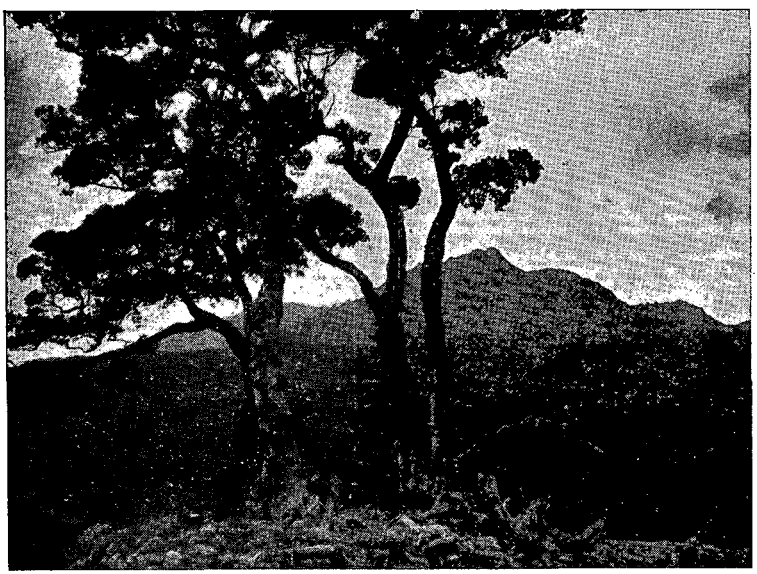


Photo: G. A. Buddle.

FORESTED SLOPES FROM TE TITOKI POINT, LITTLE BARRIER ISLAND.

BIRDS OF LITTLE BARRIER ISLAND.

BY E. G. TURBOTT, AUCKLAND MUSEUM.

Accounts of the birds of Little Barrier Island have been written at fairly regular intervals by Hutton (1869), Reischek (1886, 1887), Drummond (1908) and finally by Oliver (1922); 25 years have now passed since any ornithological description has appeared.

In the spring of 1919 Guthrie-Smith spent ten weeks on the island, and photographed the stitch bird, robin and whitehead ("Bird Life on Island and Shore," 1925); Falla (1934) summarised information on the breeding petrels in the course of a general account of the North Auckland area; and finally Hamilton (1935, 1936) made a major contribution to the study of the island in his detailed account of history, topography, geology, soils and climate (part I., 1935), plant covering (part II., 1936) and affinities of the flora, etc. (part III., 1936).

It is to be hoped that this steady growth of exploratory and related research work will lead to a more detailed study of the birds, one of the principal aims for which the island was set aside. It should be recorded, however, that successive caretakers have steadily contributed to the study of the island in their reports and personal diaries. These are worthy of being abstracted in readily available form; reports have been made to the Department of Lands and Survey, to the Auckland Institute and Museum, and, since 1905, to the Tourist Department.

RELATIONSHIPS OF THE AVIFAUNA.

There is a tendency in many accounts of offshore islands to regard the birds as unreservedly typical of forests on the mainland before European settlement. Apart from a greater potentiality for the establishment of new specific or subspecific characters in a limited population (Sewall Wright effect), it is unlikely that the bird population of an island will closely resemble that of an area of the same extent on the mainland.

Insular climatic and other physical conditions tend to be distinctive; and, in the case of Little Barrier, there may be added the mountainous terrain and correspondingly varied plant covering.

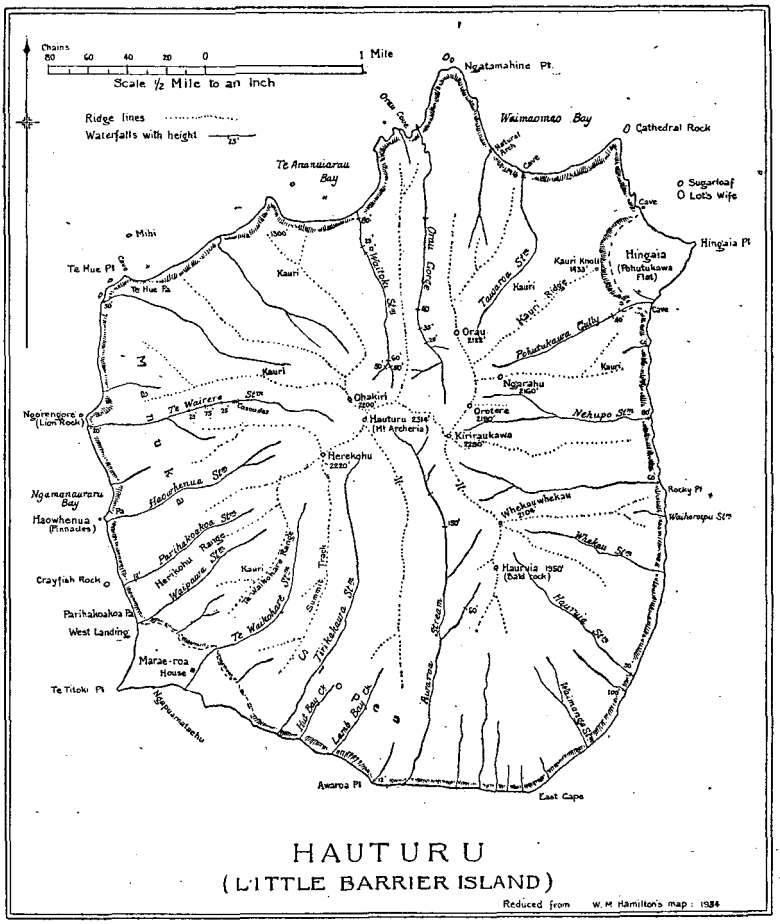
Little Barrier Island rises in a multitude of steep ridges separated by deep ravines, ascending to a central group of peaks culminating at Mt. Hauturu (2378 feet, revised altitude). The general elevation is thus considerable within the total area of the island, which is 7,000 acres.

The only level ground is the homestead flat behind the boulder banks of south-western Te Titoki Point; for Hingaia ("Pohutukawa Flat") consists of a tumbled mass of rocks formed by an old landslide.

As a result of the rugged surface there is often little soil, and generally much fragmentary surface material is present. A related factor, of considerable importance to forest birds, is the scarcity of surface water: rain sinks quickly beneath the rocks of the stream beds, which are in most cases running watercourses only for a short period after a heavy fall of rain.

Forest or scrub clothes the island from the peaks to shore level, broken only by the fenced 60 acres of clearing on "The Flats," representing the caretaker's garden and house-paddocks. As indicated in

Hamilton's detailed account of the vegetation (1936) there is a rapid transition from fringing coastal scrub, through heavy inland forest, to wind-blown scrub again on the summit. As the land rises abruptly from the shore, coastal forest gives place to tall tawa-rata, with kauri and beech on the ridges; at higher elevations there is a preponderance of mossy towai **(Weinmannia sylvicola)** and tawa; and on the misty, wind-swept summit ridges grows a dark, low forest of **Quintinia serrata** and **Q. acutifolia, Ixerba brexioides and Metrosideros umbellata,** heavily clothed with moisture-loving mosses, liverworts, lichens and filmy-ferns.



Of a different nature is the large area on the south-western side of the island, which was cleared during the period of settlement by felling, fire and stock. This has been allowed to regenerate, and is at present covered by tall tea-tree and transition forest. It might be noted that most visitors are unable to penetrate far beyond the south-western slopes traversed by the "Summit Track," which is the region most affected by clearing and regeneration.

The effect of these distinctive environmental conditions upon the bird life requires further study. Most species appear to range freely over the island, with a considerable degree of seasonal movement from one vegetation region to another in accordance with changing food supplies.

In two cases at least, local conditions may be regarded as directly affecting the distribution of a species. The kiwi is heard at night only about the south-western flat and on the neighbouring low slopes, and may well be prevented from spreading over the remainder of the island by the rocky nature of the ground, which would tend to restrict its normal feeding.

Again the old clearings on the south-western slopes have had a noticeable effect upon the nesting habits, not in this case of a forest species, but of the breeding population of Cook's petrel. For at least one-third of its distance to the summit the track passes over ground more or less denuded of its covering of leaf mould and humus. Here petrels could dig only with difficulty, and it is not until this region is passed that nesting burrows become frequent.

In addition to such general comparison with the mainland, it is particularly interesting to compare forest conditions on the island with those of other coastal islands to the north, especially with Hen Island, upon which I carried out a bird census in 1939 (Turbott, 1940). It is apparent that Little Barrier, with its relatively large area and more varied plant covering, will reflect mainland conditions more closely than these smaller islands. Hen Island is approximately 1,175 acres in extent as compared with the 7,000 acres of Little Barrier. Although both islands support such typically forest species as pigeon, kaka, tui and bell bird, there is a considerable divergence between the coastal forest of Hen Island (cf. Cranwell & Moore, 1934) and the more varied rain forest of Little Barrier (cf. Hamilton, 1936), and a census on Little Barrier would probably show a greater number per unit area of such birds as pigeon and kaka, in accordance with a more varied food supply and range of nesting sites. It may be noted also that several species, including the whitehead constitute an important element in the Little Barrier bird life absent on Hen Island.

On the much smaller Poor Knights group (area 480 acres), the bell-bird is abundant but kaka, pigeon, tui and other species, are absent, probably because the total population of these birds which the islands could support would be below the limit for survival. The vegetation here is essentially a coastal scrub, with some coastal forest (cf. Cockayne, 1906; Cranwell, 1937; Buddle, 1941 and 1946).

Unfortunately our visit to Little Barrier (October 1st-10th, 1945) was too short to enable us to carry out census work, which would have permitted of direct comparison of the total population density with that on other islands. It may be recorded that an unpublished census by Mr. P. C. Bull and the present writer in 1940 on the Poor Knights Islands indicated a lower total density than that recorded on Hen Island (Turbott, 1940).

Direct comparison by census methods with unmodified mainland forests is, of course, no longer possible.

The elements in the avifauna are represented in the following lists of species recorded from the island by various authors:—

A.—SPECIES BREEDING, OR APPARENTLY BREEDING.

*Kiwi	**Apteryx australis.**
Little blue penguin	**Eudyptula minor**
Diving petrel	**Pelecanoides urinatrix**
Fairy prion	**Pachyptila turtur**
Fluttering shearwater	**Puffinus gavia**
Allied shearwater	**P. assimilis**
Black petrel	**P. parkinsoni**
Grey-faced petrel	**Pterodroma macroptera**
Cook's petrel	**P. cookii**
Pied shag	**Phalacrocorax varius**
Bush hawk	**Falco novaeseelandiae**
Harrier	**Circus approximans**
Brown quail	**Synoicus ypsilophorus**
Banded rail	**Hypotaenidia philippensis**
Marsh crake	**Porzana pusilla**
Black-backed gull	**Larus dominicanus**
Pigeon	**Hemiphaga novaeseelandiae**
Brown kaka	**Nestor meridionalis**
Red-fronted parrakeet	**Cyanoramphus novaeseelandiae**
Yellow-fronted parrakeet	**C. auriceps**
Orange-fronted parrakeet	**C. malherbei**
Shining cuckoo	**Chalcites lucidus**
Long-tailed cuckoo	**Eudynamis taitensis**
Morepork	**Ninox novaeseelandiae**
Kingfisher	**Halcyon sanctus**
Rifleman	**Acanthisitta chloris**
Pipit	**Anthus novaeseelandiae**
Grey warbler	**Pseudogerygone igata**
Pied tit	**Petroica macrocephala toitoi**
N.Z. robin	**Miro australis**
Pied fantail	**Rhipidura fuliginosa**
Whitehead	**Mohoua ochrocephala albicilla**
Silvereye	**Zosterops lateralis**
Tui	**Prosthemadera novaeseelandiae**
Bellbird	**Anthornis melanura**
Stitch bird	**Notiomystis cincta**
Saddleback	**Creadion carunculatus**
Greenfinch	**Chloris chloris**
Chaffinch	**Fringilla coelebs**
Goldfinch	**Carduelis carduelis.**
Sparrow	**Passer domesticus**
Yellowhammer	**Emberiza citrinella**
Thrush	**Turdus ericetorum**
Blackbird	**T. merula**
Hedge sparrow	**Prunella modularis**
Skylark	**Alauda arvensis**
Starling	**Sturnus vulgaris**

* Probably from introduced stock.

B.—NON-BREEDING SPECIES AND STRAGGLERS.

*Large spotted kiwi	**Apteryx haastii**
Blue petrel	**Halobaena caerulea**
Sooty shearwater	**Puffinus griseus**
Mottled petrel	**Pterodroma inexpectata**
Gannet	**Morus serrator**
Black shag	**Phalacrocorax carbo**
White-throated shag	**P. melanoleucos**
Little pied shag	
Pukeko	**Porphyrio poliocephalus**
Oystercatcher	**Haematopus sp.**
Curlew	**Numenius madagascariensis**
White-fronted tern	**Sterna striata**
Red-billed gull	**Larus novaehollandiae**
*Kakapo	**Strigops habroptilus**
Australian raven	**Corvus coronoides**

* Introduced.

I have included tentatively in one or other of the above categories the following species, records of which we were unable to confirm:—

Large spotted kiwi **(Apteryx haastii)**; cf. Oliver, Journ. Sci. Tech., 1922, p. 290.

Blue petrel **(Halobaena caerulea)**, cf. Iredale, 1913, p. 25.

Fairy prion **(Pachyptila turtur)**; cf. Reischek, 1887, p. 183; Buller, 1888, p. 210.

Sooty shearwater **(Puffinus griseus)**; cf. Reischek, 1887, p. 183. **(P. tristis)**; Drummond, 1908, p. 506.

Fluttering shearwater **(P. gavia)**; cf Reischek, 1886, p. 94.

Allied shearwater **(P. assimilis)**; cf. Reischek, 1887, p. 183; Buller, 1888, p. 237; Iredale, 1913, p. 19.

Mottled petrel **(Pterodroma inexpectata)**; cf Drummond, 1908, p. 506.

Black shag **(Phalacrocorax carbo)**; cf. Drummond, 1908, p. 503.

Little pied and White-throated shag **(P. melanoleucos)**; cf. Reischek, 1887, p. 183.

Bush hawk **(Falco novaeseelandiae)**; cf. Hutton, 1869, p. 160; Reischek, 1886, pp. 87, 97.

Marsh crake **(Porzana pusilla)**; cf. Drummond, 1908, p. 506; Oliver, 1922. (Confirmed by Miss H. M. Shakespear, 1947.)

Oystercatcher **(Haematopus sp.)**; cf. Hutton, 1869. p. 160; Reischek, 1887, p. 183.

Orange-fronted parrakeet **(Cyanoramphus malherbei)**; cf. Reischek, 1887, p. 146; Oliver, 1930, p. 415.

Kakapo **(Strigops habroptilus)**; cf. Oliver, Journ. Sci. Tech., 1922, p. 240.

Saddleback **(Creadion carunculatus)**; cf. Layard, 1863, p. 224; Hutton, 1869, p. 160; Reischek, 1887, p. 188. (See below.)

The avifauna thus includes or is known to have included most of the birds characteristic of the original forests of the adjacent mainland. The two notable exceptions are the blue-wattled crow **(Callaeas cinerea wilsoni)** and the North Island woodhen **(Gallirallus greyi)**, both of which, had they been present, would almost certainly have been observed by the early naturalists.

The crow occurs at present on Great Barrier Island, 11 miles distant from Little Barrier, and was once common on the Coromandel Peninsula and other parts of the mainland. Although the possibilities of bird distribution, even in weakly flying species, should not be under-estimated

there seems to be no doubt that the crow with its limited powers of flight and sedentary habits, would be quite unable to cross these narrow strips of water. It seems probable that both crow and woodhen were absent from the Little Barrier region, because of unsuitability of habitat, at the time when submergence separated it from the adjacent areas. In this case it would be necessary to assume a considerable reduction in the powers of flight of these two species before the final submergence, which probably occurred during the early Recent (cf. Henderson, 1924).

It is worth recording that little evidence is available as regards the extent to which birds pass backwards and forwards between the island and the mainland (15 miles distant at Cape Rodney) or to the surrounding islands. As in the case of the more distant outlying islands, the sea passage has proved no barrier to introduced birds. In the case of strongly-flying species, interchange of individuals is probably comparatively frequent, while passages by birds of apparently weaker flight may be commoner than might be expected. Miss H. M. Shakespear, to whom I am indebted for valuable notes on Little Barrier, informs me that she has seen pipits **(Anthus novaeseelandiae)** some miles out at sea between the island and the mainland.

The explanation of the historical extinction of the saddleback seems to lie in the presence of cats, especially in view of the fact that the bird apparently disappeared at a time when settlement and exploitation of the island was at its height (1860-1890)*. There are no cats on Hen Island, where this species is still a vigorous element in the bird life, and my impression is that the introduction of cats would result there in immediate reduction and probably elimination of the saddleback. It frequently feeds on the forest floor, where it may be almost completely hidden amongst ferns and debris as it turns over the leaf mould; and the adult birds would be vulnerable in many of the nesting situations.

I am indebted to Mr. A. S. Wilkinson for a note on an apparently unsuccessful attempt to re-establish the saddleback on Little Barrier. Twelve saddlebacks, six of each sex, were brought from Hen Island, and liberated near the caretaker's house in October, 1925.

An account of the history of cats and other pests on Little Barrier may here be of interest. Reischek (1886), in referring to the stitch bird, says (p. 87) that "these rare birds will soon disappear, even from these lonely wilds, owing to the domestic wild cats, which are very numerous, and commit great havoc among them." In his later description of the island (1887), based upon five visits between 1880 and 1885, he refers (p. 184) to wild pigs and cats as both very destructive; "the former root all the ground-birds out, and devour them; the latter watch night and day for their prey."

It would thus appear that cats had spread to many parts of the island at this time; and it is accordingly interesting to note that between 1897 and 1910, while Mr. R. H. Shakespear was caretaker, cats were apparently very uncommon. This is indicated by Drummond's statement (1907, p. 504) that Shakespear considered cats very rare, and

[*Hutton describes the saddleback as very common on Little Barrier in 1868; it was last seen by Reischek in 1882, when it was very rare.]

believed that the Norway rat and pig were absent; and by a recent communication from Miss H. M. Shakespear, who informs me that she remembers no sign of wild cats during the thirteen years which she spent on the island.

I have been particularly interested to hear from Mr. D. R. Campbell, of Auckland, who was present at the departure of Tenetahi and his family in c. 1896, that at least twenty cats were destroyed about the settlement on that occasion. This fact, in view of their subsequent rarity, suggests that those recorded by Reischek may have been loosely attached to the Maori settlement. As Hamilton (1935, p. 470) indicates, the Maori occupation in more recent times was sporadic, and cats would probably have ranged well afield during the absence of their owners.

Whether cats were subsequently brought to the island, or surviving animals multiplied rapidly, they were very common by 1932. Mr. L. Hardgrave, who accompanied his father, Mr. W. H. Hardgrave, to the island, and later followed him as caretaker, has kindly given me the following records. During the eleven years which he spent on Little Barrier approximately 360 wild cats were confirmed as destroyed. A campaign against rats resulted in the destruction in the first year of over 2,000, and of about 400 a year in subsequent years—a total of approximately 6,000.

Dr. W. M. Hamilton and Mr. C. Parkin inform me that cats still occur in considerable numbers on all parts of the island in spite of vigorous efforts to destroy them by both shooting and trapping. Members of our party saw one of these animals on the shore near the homestead.

It may be noted, finally, that the stitch bird, as a hole-nesting species, seems to be assured of survival in spite of the presence of these animals on Little Barrier. Guthrie-Smith describes its nesting holes in tall trees, well out of reach of cats.

NOTES ON THE BIRDS OBSERVED.

Kiwi **(Apteryx australis)**.—The inclusion of the kiwi as endemic to Little Barrier rests only on Buller's statement (1888) that several were collected there by T. Kirk. The present stock is almost certainly descended from those liberated near the caretaker's house (Oliver, Journ. Sci. Tech., 1922, p. 290). An adult bird was captured at night during our visit, and the following measurements recorded before its release: Culmen, 12.2; tarsus, 8.0; toe, 7.4 cm. These fall well within the measurements of males of North Island birds **(Apteryx australis mantelli)** (Bartlett) and it was noticed that the feathers were harsh to the touch, a distinctive characteristic of North Island as compared with South Island birds.

Kiwis were quite common on the pasture of the homestead flat, where they were seen by torchlight, and heard every night. They penetrate to the manuka forest on the neighbouring slopes, but were not heard on any other part of the island. P.C.B. heard none at Pohutukawa Flat, where the ground is particularly rocky; and calls heard during a clear night from Mt. Herekohu (The Thumb) seemed to come from the slopes close to the homestead.

As stated above, the restricted distribution of the kiwi on Little Barrier seems probably due to the rocky surface of the remainder of the

island, and not simply to failure to spread from the point of release. The Flat was probably originally a lagoon behind the boulder banks, and still retains its swampy nature to a considerable extent. Buller does not indicate the locality in which Kirk obtained indigenous specimens, but it would probably be in the neighbourhood of the only workable landing, i.e., near the homestead.

The individual captured fed readily on worms dug up in the caretaker's garden, where supplies proved plentiful; animal food is probably readily available on "The Flat" at all times of the year. The summer of 1945-46, however, was marked by a particularly dry spell, and Mr. Parkin made the remarkable observation that kiwis were eating grapes on the concrete yard by his back door. Bell birds and tuis were feeding on the grapes, many of which, as a result of their vigorous movements would fall on the concrete. The kiwis had been seen eating grapes in this way for some weeks.

Kiwis apparently breed, a half-grown chick being seen by torchlight (G.A.B.) on 5th October.

Little blue penguin **(Eudyptula minor).**—Seen just offshore by day and heard ashore at night. Nests were found in all suitable localities round the island, particularly at the homestead area and Pohutukawa Flat. Small colonies were located in Te Ananuiarau Bay on the northern coast, and at every suitable place between Te Titoki Point and Pohutukawa Flat. Penguins were seen moving up the stony boulder beaches towards the cover of the shore vegetation in mid-afternoon.

A specimen found washed up had been killed by oil. (P.C.B.)

Diving petrel **(Pelecanoides urinatrix).**—Observed in small numbers at sea off the island. Mr. Bull landed on the small rocky islet, known as Lot's Wife, off the north-eastern end of Little Barrier, where he found the small-mouthed burrows characteristic of this species; the identification was confirmed by an egg examined in an easily accessible burrow, and by stray feathers. The species is thus confirmed as breeding on the island; it was found only on Lot's Wife, where it appeared to occur in small numbers.

Black petrel **(Procellaria parkinsoni).**—An effort was made during our visit to check records of the breeding habits of the black petrel. It was at least possible to verify Reischek's observation that this species does not breed until November. Major Buddle, who has had experience of the island dating back to 1904, also has records of late November or early December as the laying date. His notes mention the finding of eggs chipped and about to hatch in the second week of February, and a small downy chick in March. With Mr. Bull I visited the summit on two occasions at night, but did not see or hear this species, in spite of a prolonged search by torchlight. Cook's petrels were plentiful and noisy; but it was presumed that the black petrels had not yet arrived to clean out their burrows. Numerous large burrows, presumably of this species, on the summit ridges, were evidently unoccupied, and in many cases there was spider's web across the entrance. Later in the year, on 20th December, Mr. Parkin found two dead black petrels at an elevation of 2,220 feet on Mt. Herekohu (The Thumb), one of the areas which we examined in October.

Grey-faced petrel **(Pterodroma macroptera).**—This widely distributed northern species breeds in considerable numbers round the lower parts

of the island. Burrows were found above the cliffs to the north-west of the homestead, and round the western coast as far as the Pinnacles, from which area it was heard calling at night. Mr. Bull found evidence of nesting in and just above the sea cliffs at intervals all round the coast; it was also present on Lot's Wife and in the old sea cliffs behind Pohutukawa Flat. A broken egg, which had apparently hatched, was found outside one burrow; and the considerable number of dead birds and skeletons found at various points suggested that wild cats kill this species as well as **P. cookii.**

Cook's petrel **(Pterodroma cookii).**—This is the common nesting petrel of the inland slopes, and even from the homestead was particularly noisy at night, especially on nights when considerable numbers of the birds seemed to be in the air in the neighbourhood of the summit. As in other petrels, the volume of sound seemed to vary from night to night, probably according to weather conditions.

During our visits to the summit at night (P.C.B. and E.G.T.) we found ourselves level with or above the incoming birds, which we saw clearly by torchlight as they swirled close to us through the mist. Two distinct calls were heard, one deep and throaty, and the other the characteristic reedy "ti-ti-ti-ti."

Burrows were common about the track from about 1,000 feet to the summit, and seemed to be more plentiful on the last few hundred feet.

Remains of this petrel destroyed by cats are found at intervals on the Summit Track and on all parts of the island. Direct evidence of the same destructive process was given by the discovery, at an elevation of approximately 1,500 feet, of a Cook's petrel alive on the track, with extensive injuries characteristic of an attack by a cat. On the first day's walk to the summit the remains of 54 petrels, mostly of this species, were found on, or within sight of, the track. Most of these remains were old, and probably represented birds killed during last year's breeding season.

Live measurements of two birds captured at night, and later released, are worth recording as records from the breeding area (millimetres):—

Culmen	Wing	Tail	Tarsus	Toe
28	235	94	32	41
28	227	88	29	37

An observation by Mrs. Parkin made on January 12, 1944, is of interest in view of the lack of information on the breeding habits of this species. On this date a burrow was accidentally laid open, and was found to contain a nestling clothed in pale bluish white down; its total length was approximately 8 inches. Falla (1934) publishes a photograph of a nestling, according to Mrs. Parkin, of approximately the same age, taken early in February.

The white-faced storm petrel **(Pelagodroma marina),** giant petrel **(Macronectes giganteus)** and black-browed mollymawk **(Thalassarche melanophrys)** were recorded at sea off the island; on one occasion a giant petrel was noticed within 100 yards of the spit.

Pied shag **(Phalacrocorax varius).**—The colony breeding in pohutukawa trees on the south coast in still thriving, and at the time of our visit contained some 30 nests.

In addition a colony in pohutukawas some distance up in the forest was observed at Te Ananuiarau Bay, where approximately 20 nests were

counted. There was no sign of the colony nesting on rock at the northern end of the island which was examined and photographed by Major Buddle in 1904-5. (M.W.H. and P.C.B.)

Both colonies provided evidence of the extended breeding season of this species. There were a number of fledglings already out of the nests, while one nest in the south-western colony contained a chick not yet a week old. Adults were seen carrying building material. According to Mr. Parkin there is still activity at the south-western colony as late as January.

An immature bird of last season was observed and photographed on the boulder beach close to the colony.

Gannet **(Morus serrator)**.—Seen fishing offshore from time to time from all parts of the coast.

Harrier **(Circus approximans)**.—On at least four occasions a single harrier was observed.

Mr. Parkin has since reported the presence of a tame harrier, which landed in the garden on 12th January, 1946, and remained until 23rd January. The bird would follow him on the wing, and, while he was in the house would stand on the concrete at the back door. It would alight on the ground nearby when called, and even allow itself to be touched and its wings spread out. It was fed on meat and fish.

A later report, sent to Mr. P. C. Bull, records that a tame harrier appeared on Motuora Island, 25 miles to the south-west, on 7th January, 1946. It seems probable that this was the same individual; and the record indicates the ease with which the harrier may cross from the mainland or other offshore islands.

Brown quail **(Synoicus ypsilophorus)**.—The following observations are of particular interest in view of doubt as to the identity of the quail **(Synoicus** sp.) found on northern offshore islands. (cf. Buddle, 1941 and 1946.)

Reischek (1887, p. 183) lists "Coturnix pectoralis" (the Australian stubble-quail) and "Turnix varius" (the Australian painted quail) as self-introduced to Little Barrier. These are evidently mistaken identifications for a **Synoicus**, but provide interesting evidence that quail existed on the island at this early date.

According to Miss H. M. Shakespear, brown quail were common on the Flat and about the garden between 1897 and 1910. I am informed that they were heard rarely by the Hardgraves; and they were not seen during our visit.

Quail had not been recorded by Mr. and Mrs. Parkin up to 18th November, 1945, but on this date, in company with a visitor to the island, Mr. T. Shout, they heard the characteristic drawn-out call. A few days later one was seen in the garden by Mrs. Parkin, and the birds were subsequently observed quite frequently. It would thus appear that these birds were members of a flock of brown quail **(S. ypsilophorus)** which had just arrived from the mainland.

Banded Rail **(Hypotaenidia philippensis)**.—This species, previously not recorded from the island, was described by Mr. Parkin, who saw the bird close to the house on 2nd February, 1945.

Pukeko **(Porphyrio poliocephalus)**.—Miss H. M. Shakespear has given me permission to include her record of a pukeko which remained on the island for a few days during 1908-09.

Curlew **(Numenius madagascariensis).**—A pair landed in the neighbourhood of the homestead during a heavy north-easterly gale on 19th September, 1945. They were seen for four days by Mr. Parkin, who later verified the identification from Museum specimens. Mr. Parkin notes that they were seen to settle on kanuka trees.

(?) Fairy tern **(Sterna nereis).**—Dr. Hamilton and Mr. Parkin, both competent observers, described a colony of small terns, believed to be of this species, nesting on the cliffs of the west coast; they were last observed on 6th November, 1944. The site was examined (W.M.H. and P.C.B.) but there was no sign of the birds.

White-fronted tern **(Sterna striata).**—Four adults in breeding plumage were seen on an offshore rock north of Te Ananuiarau Bay. (P.C.B.)

Black-backed gull **(Larus dominicanus).**—Observed at scattered intervals all round the island during circumnavigation. (P.C.B.)

Red-billed gull **(Larus novaehollandiae.)**—Two seen at Pohutukawa Flat. (P.C.B.)

Pigeon **(Hemiphaga novaeseelandia).**—A deceptive impression of numbers of the pigeon was perhaps given by the constant presence of some 25 birds about the homestead, but it was observed elsewhere at frequent intervals and appeared to be plentiful. There would also seem to be a fairly considerable death roll in view of the fact that the remains of three dead birds were found in the neighbourhood of Te Titoki Point during our ten days' visit; one of these was a recently-dead specimen in splendid plumage which had apparently struck an obstruction in flight.

The homestead pigeons were feeding on the ground on young clover; they were also observed on the shore eating young leaves of pohuehue **(Muehlenbeckia complexa).**

Brown kaka **(Nestor meridionalis).**—A kaka was seen at intervals in the garden, where it was attracted by tree tomatoes, and had a past history as regards oranges, lemons and green figs. Elsewhere few were seen: it was observed several times on the Summit Track, and two were seen at Pohutukawa Flat. (P.C.B.)

Red-fronted parrakeet **(Cyanoramphus novaeseelandiae).**— Several were present in the neighbourhood of the homestead and were seen frequently. One at Pohutukawa Flat. (P.C.B.)

Yellow-fronted parrakeet **(Cyanoramphus auriceps).**—One appeared at the homestead, where it was seen on two successive days. According to Mr. Parkin and Dr. Hamilton this species had not been seen at the house for about 13 years.

Parrakeets were also recorded in passing up the Summit Track, and on the south coast, but at too great a distance for identification.

Shining cuckoo **(Chalcites lucidus).**—Heard frequently on the lower slopes on all parts of the island visited; on one occasion heard calling loudly and persistently at 11 p.m. The first call this year (1945) was heard by Mr. Parkin on 28th September.

Long-tailed cuckoo **(Eudynamis taitensis).**—Heard near the homestead and at Pohutukawa Flat (P.C.B.); one was seen close to the Summit Track, calling constantly (E.G.T.).. Mr. Parkin's earliest record for 1945 was 30th September.

Morepork **(Ninox novaeseelandiae).**—Heard at the homestead, Pohutukawa Flat and at The Summit, but in every case only a single bird. One at Pohutukawa Flat was mobbed by stitch birds, whiteheads and

blackbirds. Pellets, which were presumed to be those of moreporks, were found on three occasions: one contained the foot of a Cook's petrel and another the bones of a rodent. ((P.C.B.)

Kingfisher **(Halcyon sanctus).**—Seen at intervals all round the coast, but not in great numbers. One was heard halfway up the track; but there were at least two birds about the homestead.

Rifleman **(Acanthisitta chloris).**—A call was heard which was doubtfully recorded as this species; later, however, one was seen. (W.M.H.) Miss H. M. Shakespear remarks that between 1897 and 1910 it was frequently seen, particularly in the heavy forests of the northern slopes.

Pipit **(Anthus novaeseelandiae).**—Observed by several members of the party.

Grey warbler **(Pseudogerygone igata).**—Distributed throughout the island, although probably more common in manuka forest on the lower south-western slopes. Singing strongly.

Pied tit **(Petroica macrocephala toitoi).**—Seen in pairs both at the homestead and Pohutukawa Flat, and on the Summit Track up to approximately 1200 feet. Possibly more common in manuka forest. The song was frequently heard; and a male was seen feeding the female. (P.C.B.)

Robin **(Miro australis).**—Only three birds seen, all above 2000 feet; they were particularly quiet and retiring, although quite confident. This was not my experience during a visit to the island on 27th February, 1934, when robins were seen in manuka or transition forest on the lower south-western slopes, and approached us closely.

Pied fantail **(Rhipidura fuliginosa).**—Observed in pairs on all parts of the island visited, although not seen above 1200 feet. From the numbers observed they would not be regarded as plentiful, but possibly, as in the case of several other species, were occupied with nesting.

Whitehead **(Mohoua ochrocephala albicilla).**—According to our observations during this visit the whitehead would be regarded as the commonest bird on the island. A count of those heard singing from the track, including at least eight heard from The Summit, totalled 48; and six were recorded on another occasion from the shore during the short walk to Awaroa Point. The birds were generally observed in small flocks, and were singing strongly. Several different notes can be distinguished, including a common song very like that of the chaffinch, but without the final rattle; another call frequently heard is almost bell-like and could be confused with certain notes of the bell bird.

A nest was found on 3rd October in the dense wind-swept tea-tree just inside the boulder bank near Te Titoki Point. On this date it was almost completed; the birds continued building, but no eggs had been laid by the 8th. (G.A.B.). Major Buddle also states that nests were plentiful in tea-tree scrub on the Flat during 1904-5-6.

Silvereye **(Zosterops lateralis).**—Still in flocks in most cases of c. 20, although one large group of c. 100 was recorded. (G.A.B.). These were all seen at sea level (homestead, East Cape, Pohutukawa Flat).

Tui **(Prosthemadera novaeseelandiae).**—There were always up to a dozen about the garden, feeding regularly on sweetened water from the feeding trough. The group included an individual of dominating type, which would not tolerate the others while feeding; this bird was present throughout our stay, but it was not possible to decide whether the remaining individuals formed a permanent group. They would come to

the trough together at regular intervals of several minutes, passing the intervening period in the trees above, singing spasmodically, and apparently waiting for the food to digest. They were also feeding eagerly on a pink azalea bush in full flower beside the kitchen window, and descended to the ground to take nectar from garden freesias and lachenaleas.

Elsewhere tuis were common along the coastal regions, and were plentiful at Pohutukawa Flat, where pohutukawa **(Metrosideros excelsa)** was already in flower. (P.C.B.). They were also observed feeding on flowering tree fuchsia **(Fuchsia excorticata.)** (E.G.T.).

Bell bird **(Anthornis melanura).**—Observed sparingly on all parts of the island visited, and at all altitudes. A concentration occurred on early-flowering pohutukawa at sea level on the north-eastern side of the island. (P.C.B.). There were several about the homestead feeding on nectar from flowering orange, apple and **Watsonia**, and searching for insects in the orchard.

Later in the season (December, 1945) Mrs. Parkin had a bell bird's nest under observation in the grape vine close to the house. It contained three eggs which hatched in 12 days; and it was noticed that the work of incubation was carried out entirely by the female.

On my previous visit to the island (27th February, 1934) the bell bird was the only species feeding on the sweet material provided by the caretaker. During our present visit only the tui was observed at the feeding trough. Mr. Parkin confirms the fact that there is a periodic fluctuation between these two honeyeaters through the year.

This may be partly due to the dominating attitude of the tuis, but is probably also governed by a general divergence in breeding seasons, the tui in general being an earlier breeder than the bell bird. Presence or absence would then be explained by the exigencies of moult and pre-breeding behaviour. It has been mentioned that, although absent from the feeding trough, bell birds were numerous on nectar-bearing trees elsewhere on the island.

Stitch bird **(Notiomystis cincta).**—All visitors to the island have watched eagerly for the appearance of the stitch bird, and in most cases have had our own experience of obtaining a satisfactory, if fleeting glimpse of one or two birds. The first stitch bird was seen close to the Summit Track at the commencement of higher level forest (approximately 1,500 feet); another was seen on the Summit ridge at closer quarters. The last was apparently an immature bird of last year, in general very like an immature bell bird, although somewhat shorter and more heavily built; in general colour it was olive-grey, with darker shading on the head, and a broken white bar on the wing. The call was a continuous, high-pitched note somewhat like that of the rifleman.

On our second visit to the summit we were fortunate in seeing a male in full plumage—deep black head, and yellow band on the breast—which called beside the track at approximately 1,200 feet. The calls included a high-pitched cry and a distinctly bell-like note, resembling those of the other honeyeaters. It was in company with a small flock of whiteheads, which were feeding and singing by the track.

A total of three adult males was seen at various points by members of the party; the call of birds of this species, however, was heard quite frequently, although in most cases in the higher bush.

At Pohutukawa Flat it was present at sea level, where it was feeding on flowering pohutukawa in company with tuis, bell birds and silvereyes. (W.M.H. and P.C.B.). It is also seen about the homestead and probably becomes widely distributed over the island as nectar-bearing plants come into flower.

Chaffinch **(Fringilla coelebs).**—Common about the homestead, where a group of 10 were seen together (P.C.B.) but not observed in forest.

Greenfinch **(Chloris chloris).**—Observed on several occasions.

Goldfinch **(Carduelis carduelis).**—Observed near the homestead.

Sparrow **(Passer domesticus).**—At least 30 about the homestead; one drank from the feeding trough in an interval between visits by tuis.

Yellowhammer **(Emberiza citrinella).**—A male and female were seen near the homestead. (P.C.B.)

Thrush **(Turdus ericetorum).**—About the garden. A nest containing four young about three days old was found on 3rd October, and flying young were also observed. (P.C.B.)

Blackbird **(Turdus merula).**—Common about the homestead, and, in contrast with other introduced species, observed in forest on many parts of the island. One nest was found on 9th October, the female sitting on three eggs; the full song was heard constantly.

Hedge sparrow **(Prunella modularis).**—Two were seen near the homestead; this species has spread throughout the North Auckland area only within the last few years.

Skylark **(Alauda arvensis).**—Eight or nine were seen constantly together on the Flat near the homestead, and were apparently associated as a small flock.

Starling **(Sturnus vulgaris).**—Common on the Flat; also recorded feeding among seaweed at low tide on isolated rocks off the western coast. (P.C.B.)

Australian raven **(Corvus coronoides).**—During a period of several days of stormy weather, a stray bird, identified as a member of the crow family, appeared on the island. It was particularly wary, and our closest view was at several hundred yards, from which distance it was only possible to ascertain that the bill and feet were black. Its call was heard rarely, and was described as a deep croak. (G.A.B.). In flight the bird resembled the rook **(C. frugilegus),** but the face was fully feathered, not bare as the adult rook; and the possibility that it belonged to this species must probably be ruled out on the grounds that young rooks only retain their facial feathering for the first winter. A certain amount of facial moult should be apparent by October: in Great Britain the facial feathers are gradually lost between January and May (Witherby, 1938, p. 21). The nearest colony of rooks in New Zealand is at Hastings, some 260 miles to the south.

The bird is thus tentatively placed in the above common south-eastern Australian species as a trans-Tasman straggler.

Major Buddle has since made the interesting record (1947) that a black bird probably the same individual, appeared on the Mokohinau group, 20 miles to the north, during this period of stormy weather.

ACCOUNT OF THE TRIP.

The visit to the island recorded in this paper was made from October 1st to 10th, 1945, by a party of seven. For permission to visit the island we were indebted to the Tourist Department; our transport was pro-

vided by the Navy, through the courtesy and special interest of Commodore W. K. D. Dowding, R.N.

During our stay we depended upon the hospitality of Mr. and Mrs. Charles Parkin, who helped us in every possible way. Fortunately, Dr. W. M. Hamilton was also a guest of the Parkins, and not only provided a willing source of information on all subjects relating to the island, which he has so thoroughly explored, but guided members of the party on several trips. Certain observations recorded above are his (W.M.H.).

Our party included three members interested in birds, Major G. A. Buddle (G.A.B.), Mr. P. C. Bull (P.C.B.) and myself. To both of my companions I am greatly indebted for generously allowing me full use of their notes; and to all members of the party for their interest in making this account of the birds as full as possible. Mr. Bull in particular explored as much of the island as could be reached in a ten days' visit. In addition to the two nights on the Summit, his activities included a trip round the coast to Pohutukawa Flat and a circumnavigation of the island by boat with Dr. Hamilton.

A great deal of my own time was devoted to making a 16 millimetre film of the birds, which is herewith recorded for documentary purposes. The birds photographed were the kaka, tui, bell bird, pigeon, kiwi, fantail, blue penguin and pied shag.

Since my return I have been indebted to Mr. A. T. Pycroft for information on literature relating to the island.

Finally, both Mr. and Mrs. Parkin have kindly provided information of special interest to this account, and it is hoped that they will continue to contribute to this journal a full series of records from the island.

LITERATURE.

Buddle, G.A., 1941.—Birds of the Poor Knights, Emu, 41, 56.
1946—A Second Visit to the Poor Knights, Emu, 45, 315.
1947—Notes on the Birds of Mokohinau, New Zealand Bird Notes, 2, 69.

Buller, W. L., 1888.—A History of the Birds of New Zealand, 2nd Ed.

Cockayne, L., 1906.—Notes on a brief Botanical Visit to the Poor Knights Islands, Trans. N.Z. Inst., 38, 351.

Cranwell, L. M. and Moore, L. B. 1935.—Botanical Notes on the Hen and Chickens Islands, Records Auckland Inst. and Museum, 1, 301.

Cranwell, L. M., 1937.—New Plant Records from the Poor Knights, Records Auckland Inst. and Museum, 2, 101.

Drummond, J., 1908.—The Little Barrier Bird Sanctuary, Trans. N.Z. Inst., 40, 500.

Falla, R. A., 1934.—The Distribution and Breeding Habits of Petrels in Northern New Zealand, Records Auckland Inst. and Museum 1, 245.

Fleming, C. A., 1941.—Notes on the Neozelanic Forms of the Subgenus **Cookilaria**, Emu 41, 69.

Guthrie-Smith, H., 1925.—Bird Life on Island and Shore. Edinburgh.

Hamilton, W. M., 1935, pt. I.; 1936, pts. II. and III.—The Little Barrier Island, Hauturu, N.Z. Journ. Sci. Tech., 17, 465 (1), 717 (2); and 18, 557 (3).

Henderson, J., 1924.—The Post-Tertiary History of New Zealand, Trans. N.Z. Inst., 55, 580.

Hutton, F. W., 1869.—Notes on the Birds of Little Barrier Island, Trans. N.Z. Inst., 1, 160, 162.

Iredale, T., 1913.—On Some Interesting Birds in the Vienna Museum, Austral Avian Record, 2, 14.

Layard, E. L., 1863.—Ibis, 244.

Oliver, W. R. B., 1922.—The Birds of Little Barrier Island, Emu, 22, 45.
1922.—Little Barrier Island Bird Sanctuary, N.Z. Journ. Sci. Tech., 4, 284.
1925.—Vegetation of the Poor Knights Islands, N.Z. Journ. Sci. Tech., 7, 376.
1930.—New Zealand Birds, Wellington.

Reischek, A., 1886.—Notes on New Zealand Ornithology, Trans. N.Z. Inst. 18: 84, 87, 90, 92, 93, 95.
1886.—Observations on the Habits of New Zealand Birds, Trans. N.Z. Inst., 18, 96.
1887.—Description of the Little Barrier or Hauturu Island, Trans. N.Z. Inst., 18, 181.
1887.—Notes on Ornithology, Trans. N.Z. Inst., 19: 184, 188.
1889.—The Story of a Wonderful Dog, Auckland.
1930.—Yesterdays in Maoriland, London, Tr. and ed. by H. E. L. Priday.

Turbott, E. G., 1940.—A Bird Census on Taranga (the Hen), Emu 40, 158.

Witherby, H. F. et al 1938.—The Handbook of British Birds, Vol. 1, London.

SOME RECENT POPULAR ACCOUNTS.

Blundell, O., In Memoriam: A Parson's Tramp, "Taranaki Herald," November, 1925. (Landed at Pohutukawa Flat in 1916 and performed probably first crossing of the island).

Cowan, J., 1939.—A Tapu Isle of Birds, N.Z. Railways Magazine, 13, 17.

Falla, R. A.—Articles in N.Z. Herald, 3 and 10 August, 1935.

Gordon, M., 1938.—The Children of Tane, London and Christchurch. The Garden of Tane, Wellington.

Pycroft, A. T.—Articles in Auckland Star, 4 and 11 February, 1928; 23 and 30 April, 1932.

Turbott, E. G., 1947.—New Zealand Bird Life, Wellington.

Dr. R. A. Falla, director of the Canterbury Museum since 1937, and the Society's first president, has been appointed director of the Dominion Museum, Wellington, in succession to Dr. W. R. B. Oliver. Dr. Falla recently went to Paris as one of the New Zealand delegates to the first conference of the United Nations Educational, Scientific and Cultural Organisation.

BANDING OF DUCKS.—A waterfowl investigation, with particular reference to the grey duck **(Anas superciliosa)** is being carried out by the Wildlife Service of the Department of Internal Affairs. The banding of ducks is an integral part of this work, which is hoped ultimately to be of benefit in improving the duck population. Members are asked to keep a look out for any bands and to return them, with such information as the date, the locality in which the bird was shot or found, and the name and address of the person concerned to the Controller, Wildlife Branch, Department of Internal Affairs, Wellington, or to the nearest Acclimatisation Society secretary or ranger. The bands are made of aluminium, and each has a number and the address "Internal Affairs, Wellington, New Zealand." Incidentally, the Wildlife Service is a member of this Society.

DONATIONS ACKNOWLEDGED.—Donations received with thanks during the year include: L. A. Brewster 2/-, S. Edwards 15/-, Mrs. Lenz 15/-, J. F. Lysaght 10/6, Miss B. McDougall 5/-, Dr. D. L. Serventy 10/-, R. H. D. Stidolph £1 (Illustrations Fund), B. Sladden £1. The amounts collected for the Relief of European Ornithologists Parcel Fund were: V. I. Clarke £3/2/7, J. M. Cunningham 10/-, Miss M. C. Hogwood 9/8, Whangarei Rod and Gun Club £3/2/7, R. H. D. Stidolph 10/-.