

Neolithic or Bronze Ages in Britain. I have, however, seen several four-horned skulls from refuse-heaps belonging to the Middle Ages. There were two distinct breeds in Britain from the Neolithic Age to the close of the Roman occupation—one small and like the Hebridean sheep, and another much coarser and thicker in the legs. Both these were two-horned.

"I am, &c.,

"W. BOYD DAWKINS."

As animals in a state of nature are seldom or never equipped with useless duplicate pairs of horns, the extra horns on these animals are probably the result of variation under domestication.

The party of Algerian Arabs now on exhibition in London in place of Buffalo Bill's Wild West Show, have brought with them goats having four horns. These are the first of the kind I have heard of; and, the sheep and goat being very closely allied, such an incident is worthy of notice in this paper. From the remains of four-horned sheep appearing about the time of the Middle Ages, perhaps they were brought to England by the Saxon or Danish colonists. It would be interesting to know if signs of such sheep are found in the Danish middens.

A previous remark about the St. Kilda sheep eating seaweed is probably an error, for I fancy St. Kilda is difficult of approach, having no beach. Likely this would be a habit of the Hebridean sheep. A native of those parts once told me that it is customary to feed horses on potatoes during the severe winter season which is experienced in those exposed islands.

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ART. XXVI.—*On the Birds of the Kermadec Islands.*

By T. F. CHEESEMAN, F.L.S., F.Z.S., Curator of the Auckland Museum.

[*Read before the Auckland Institute, 4th August, 1890.*]

At the close of a paper on the flora of the Kermadec Islands, printed in vol. xx. of the "Transactions of the New Zealand Institute," I have given a list of the birds observed during my visit to the group in August, 1887. Since then, through the kindness of Mr. Bell, the well-known resident on Sunday Island, I have obtained much additional information and many specimens. I am also much indebted to Captain Fairchild for bringing me living birds from the group on the occasion of his annual trips in the "Hinemoa," and for information respecting them. I have also received similar assistance from Mr. Alexander, Mr. Stratford, and Mr. Bethune. So much

interest is now taken in the natural history of isolated groups like the Kermadec Islands that I feel no apology is due for placing this additional information before the notice of the Institute. My previous catalogue contained the names of twenty-two species. I am now enabled to add eighteen more, making a total of forty.

It is unnecessary to preface my paper with a sketch of the physical features of the Kermadec Islands, a full description being given in Mr. Percy Smith's official report, published by the Government Printing Press, and in my account of the botany, quoted above. There are, however, several noticeable features connected with the ornithology of the group that deserve brief mention. The first, and perhaps the most remarkable, is the fact that there are no species peculiar to the group. So far as is at present known, all the birds are found elsewhere. The land-birds, without exception, are natives of New Zealand; and the sea-birds are either found in our waters, or are common on the coasts of Australia or Polynesia. Considering that both Norfolk Island and Lord Howe's Island, which are in the same latitude as the Kermadec Islands, and are of very similar size and physical structure, possess endemic species of land-birds, it is certainly surprising that there are no species confined to the Kermadec Islands. The fact is a most significant one, and certainly lends much support to the view that I have advanced, in my previous paper, of the origin of the flora and fauna of the group.

Another peculiarity is the paucity of resident species—that is, of birds that live permanently on or about the islands—and the great number of sea-birds (petrels, terns, &c.) which make yearly visits for breeding purposes. Out of the forty species mentioned in the following catalogue, not more than twelve or fifteen are permanent residents. The remainder make their appearance in the spring, many of them in enormous numbers, use the islands as a nesting-place, and disappear in the autumn as soon as their young have attained sufficient age. And I have no doubt that the proportion which the visitors bear to the residents will be increased as the ornithology of the group is studied. Every traveller bears witness to the vast number of birds present during the breeding-season, and many kinds not yet collected are sure to be obtained.

My own visit to the islands was too early in the season to obtain much information respecting the breeding-habits of the birds; but at my request Mr. Bell has especially attended to this point, forwarding me many notes and specimens of the eggs. Where the identifications are certain (in some cases I have not obtained skins of the species whose eggs he has forwarded) I have incorporated the information thus obtained with my catalogue.

1. COMMON HARRIER (*Circus gouldi*, Bonap.).

This I saw several times on Sunday Island, and a pair was also noticed on Macaulay Island. Mr. Bell states that it is not a permanent resident, but disappears each year in the month of September, returning in the following January. According to him, it is driven from the islands by the Wide-awake Tern (*Sterna fuliginosa*), which yearly visits the islands in enormous numbers for breeding purposes. On the arrival of the *Sterna* it is quite common to see parties of six or eight, or even more, pursuing a hawk and chasing it from place to place; and this goes on until the hawks disappear. Mr. Bell is confident that they migrate to New Zealand—a distance of over six hundred miles.

2. KINGFISHER (*Halcyon vagans*, Less.).

Common on Sunday Island, but not seen on Macaulay Island. Breeds in holes in the cliffs.

3. TUI (*Prothemadera novæ-zealandiæ*, Gml.).

Plentiful on Sunday Island, although its numbers, according to Mr. Bell, have been much thinned by the wild cats. It usually builds its nest among the branches of the pohutukawa (*Metrosideros polymorpha*), and its breeding-season extends from September to January. I am indebted to Mr. Bell for some eggs, which are precisely similar to New Zealand specimens. Both Mr. Percy Smith and myself remarked that its note slightly differed from that of our bird.

4. WHITE-EYE (*Zosterops cœrulescens*, Lath.).

I met with this species several times in the bush on Sunday Island, and a few individuals were noticed in a clump of stunted Carumbium bushes in the crater of Macaulay Island. Mr. Bell tells me that it is only an occasional visitant, and that he has never known it to breed on the island.

5. GROUND-LARK (*Anthus novæ-zealandiæ*, Gml.).

Apparently not uncommon on Macaulay Island, the flat grassy surface of which is a very suitable habitat for it. I did not see it on Sunday Island, but Mr. Bell states that he occasionally notices it, usually in pairs, but has never found it breeding as yet.

6. RED-FRONTED PARAKEET (*Platycercus novæ-zealandiæ*, Sparrm.).

Very plentiful on Macaulay Island, where it was seen hopping about on the short grass in flocks of from twenty to fifty, apparently feeding on the seeds of *Gnaphalium* and *Erigeron*. So tame were they, and so unused to man's presence, that it

was quite easy to walk within a yard or two of them without disturbing the flock, which went on feeding as usual. I caught several alive by moving up to them quietly and steadily and then suddenly putting my hat over them before they could fly up; and more were caught by the sailors of the "Stella" in the same way. On Sunday Island they are seldom seen; but on Meyer Island, a small islet a few miles distant, they are numerous, flitting about among the stunted *Metrosideros* and ngaio which cover the top of the islet. In this locality they are frequently snared by the members of the Bell family, who use a slender rod with a running noose of twine at the end. According to Mr. Bell, they generally breed in holes in the cliffs, but sometimes in hollow trees. All my specimens are slightly larger than New Zealand ones, but I cannot see any other difference.

7. LONG-TAILED CUCKOO (*Eudynamis tartensis*, Sparrm.).

This species I did not see, but Mr. Bell showed me the tail of a specimen shot not long before the time of my visit. According to him, it is a permanent resident, although by no means common. Miss Bell, who is familiar with the birds of the island, and who is a good observer, tells me that she has repeatedly seen the old birds feeding the young, and she considers that they build their own nest and bring up the young themselves.

8. SHINING CUCKOO (*Chrysococcyx lucidus*, Gml.).

This also I insert on the authority of Mr. Bell, who assures me that occasionally a few visit the island, but never remain more than a few days.

9. PIGEON (*Carpophaga novæ-zealandiæ*, Gml.?).

The earlier settlers on Sunday Island found a large fruit-pigeon very abundant on their first arrival; but its numbers were gradually thinned, and it was finally exterminated, partly by the settlers themselves and partly by the wild cats introduced by them. A Mr. Johnson, who resided on the island about fifteen years ago, states that it exactly resembled the New Zealand species in size and colour, and he has no hesitation in considering it to be the same.

10. MEGAPODIUS sp. (?).

The same Mr. Johnson states that when he lived on Sunday Island, which was prior to the eruption of 1876, a bird inhabited the floor of the large crater which made mounds of sand and decayed leaves 2ft. or 3ft. high, laying its eggs in the mounds. He was in the habit of visiting the mounds for the sake of the eggs and young birds, and has frequently taken

five or six of the latter from the same nest at one time. The eruption of 1876 covered the floor of the crater with a deposit of mud very similar to that thrown out by the eruption of Tarawera, and apparently killed out the species, for it has not been seen since. The evidence, such as it is, seems to point to the former existence of a species of *Megapodius*. It is worth mention that in the crater-basin of Niuafoou, one of the Tongan Islands, and which is not further removed from Sunday Island than the mainland of New Zealand, a species of *Megapodius* has long been known to exist. (See Finsch and Hartlaub, "Ornithology of Central Polynesia," p. 153; and the Rev. S. W. Baker's notes published in the Trans. N.Z. Inst., xvii., p. 452.)

11. GOLDEN PLOVER (*Charadrius fulvus*, Gml.).

According to Mr. Bell, this species sometimes visits Sunday Island. As it is frequently seen in many parts of Polynesia, and occasionally reaches our own shores, it is by no means improbable that his identification is correct; but I have seen no specimens.

12. BLUE HERON (*Ardea sacra*, Gml.).

This also I include on the authority of Mr. Bell, who informs me that it is occasionally seen in the group. It is common in many parts of Polynesia, including the Tongan Islands, the group nearest the Kermadec Islands, and whence a few individuals might easily emigrate.

13. GODWIT, or CURLEW (*Limosa novæ-zealandiæ*, Gray).

A few individuals of this species are seen on the shore of Sunday Island every spring and autumn—very possibly some of the emigrants to and from New Zealand.

14. STRIPED RAIL (*Rallus philippensis*, L.).

Sunday Island, vicinity of the lagoon in Denham Bay, but by no means common.

15. SWAMP RAIL (*Ortygometra tabuensis*).

I am indebted to Mr. Bell for a skin of this species, obtained on Meyer Island. He also tells me that it occurs, with the preceding, near the lagoon in Denham Bay. It is common on many of the Polynesian islands, but its occurrence on Sunday Island is certainly very remarkable, considering its feeble powers of flight.

16. PUKEKO (*Porphyrio melanotus*, Gould).

During my visit in 1877, I saw a single individual near the lagoon in Denham Bay. Mr. Bell tells me that it is decidedly scarce.

17. GREY DUCK (*Anas superciliosa*, Gml.).

I did not see this, and insert it in my list on the authority of Mr. Bell, who states that it exists on the crater-lakes, but has been very scarce since the eruption of 1876. He is confident that it is the same as the New Zealand species. Mr. Stratford informs me that it is so rare that the total number found on the island does not exceed seven. A single specimen of a smaller species is reported to have been seen on one occasion.

18. WIDEAWAKE TERN (*Sterna fuliginosa*, Gml.).

This species arrives at the end of August, and remains until the end of December or middle of January. According to Mr. Bell, it is one of the commonest sea-birds on the islands during this period, although very rarely seen during the winter months. It is active and noisy, and, as mentioned at the commencement of these notes, its first act on arriving on the island is to drive off the few hawks which are present. It is gregarious, breeding in immense colonies both on the main island and the adjoining rocks, one of the largest breeding-places being on the sandy beach of Denham Bay. Its nest is a slight hollow scooped out of the bare sand, and it only lays a single egg. The eggs seem to vary in size, but the average of six sent by Mr. Bell is 2.1in. by 1.5in. The colour is a pale buffy-white, copiously marked with blotches of reddish-brown. I am indebted to Mr. Bell for several skins, and to Captain Fairchild for living specimens taken from Curtis Island. It is somewhat singular that no stray specimens of this bird have been observed on the New Zealand coast, seeing that it breeds in such immense numbers in two localities so near to us as Sunday Island and Norfolk Island. It appears to be spread all round the world in tropical and subtropical seas.

19. CASPIAN TERN (*Sterna caspia*, Pall.).

Inserted on the authority of Mr. Bell. I have seen no specimens from the group:

20. WHITECAP NODDY (*Anous melanogenys*, G. R. Gray).

I have received two skins and several eggs of this handsome species from Mr. Bell. He states that it is tolerably common during the spring and summer months, but disappears at the commencement of autumn. So far as he knows, it only breeds on Meyer Island. It makes a slightly-hollowed nest of sea-weed mixed with leaves, which it cements to the branches of trees a short distance from the ground. Usually it selects a closely-branched *Pisonia* for this purpose, but the

ngaio and pohutukawa are also made use of. Only one egg is laid. Those sent to me measure 1.80in. by 1.25in. The ground-colour is creamy-white, and on it are numerous rather small spots of reddish-brown. The silvery-grey patch on the top of the head of this species contrasts very vividly with the sooty-black of the rest of the plumage. It seems to be not uncommon about Norfolk Island, where it also breeds, but it has not been previously recorded from the limits of the Colony of New Zealand.

21. LITTLE NODDY (*Anous cinereus*, Gould).

This was one of the commonest sea-birds at the time of my visit in 1887, and was especially plentiful on the outlying rocks. During our stay we landed two or three times on Meyer Island, so often mentioned in these notes, and on each occasion almost every ledge on the cliffs near the landing-place was occupied by these birds, which watched our proceedings with the greatest curiosity. Small flocks of them would every now and then leave their resting-places, fly backwards and forwards over our heads, noisily screaming all the time, and then return to their quarters, to be quickly imitated by another party. They were quite tame, allowing us to approach within a few feet. On discharging a gun clouds of them rose in the air, circling and wheeling about in the utmost confusion, but they soon quieted down. They were also plentiful on Macaulay Island; and it was pretty to look from the cliff at the extreme western point of the island, which is almost 700ft. in height, and see large colonies of them quietly basking in the sun on inaccessible ledges hundreds of feet below the spectator. According to Mr. Bell, they breed in October and November, selecting ledges on the faces of the cliffs. No nest whatever is made, the single egg being deposited in a slight natural hollow. One sent to me measures 1.7in. by 1.1in. In colour it resembles the preceding species, but is slightly darker, and the spots are much smaller and more numerous.

The common Noddy (*Anous stolidus*, L.) also probably breeds in the group, as it is common in Norfolk Island, the Tongan Islands, and elsewhere in Polynesia.

22. LITTLE WHITE TERN (*Gygis candida*, Gould).

In vol. xxi. of the "Transactions of the New Zealand Institute," p. 122, I have mentioned this species as regularly breeding on Sunday Island, and have given particulars of its nesting-habits as observed by Mr. Bell. Since then I have received several skins and some more eggs; but I have no particulars of importance to add to the account then given.

23. FRIGATE BIRD (*Tachypetes aquilus*, L.).

This species is inserted on the authority of Mr. Bell, who states that it frequently visits the group during summer, but is not a permanent resident.

24. MASKED GANNET (*Sula cyanops*, Sund.).

This handsome bird is not uncommon all through the Kermadec Group, breeding on Curtis Island, on Hazienda Island (a rock off the eastern side of Macaulay Island), and on Meyer Island. I have no information additional to that given in my paper printed in vol. xxi. of the Transactions, p. 121, where its occurrence in the group was first recorded. Dr. Crowfoot, in a paper on the sea-birds frequenting Norfolk Island, printed in the "Ibis" for 1885, states that it usually lays two eggs; and Mr. Bell, speaking to me of its breeding-station on Meyer Island, made the same statement. But Captain Fairchild, who has brought me several fine specimens from Curtis Island, found only one egg in each nest.

25. COMMON GANNET (*Sula serrator*, Bp.).

In addition to the previous species, Mr. Bell states that another gannet not unfrequently visits Sunday Island. He is confident that it is identical with the New Zealand *Sula serrator*, and I therefore include it in the list on his authority.

26. TROPIC BIRD (*Phaeton rubricauda*, Bodd.).

Visits Sunday Island in great numbers for breeding purposes, arriving about the end of October or beginning of November, and leaving again in June or July. I am indebted to Mr. Bell for several roughly-prepared skins and for eggs. I have also to thank Mr. Alexander for a beautifully-prepared skin in full plumage, which is now set up in the Museum. Mr. Bell informs me that it breeds in holes on the edges of the cliffs, depositing its single egg on the bare floor of the hole. The eggs have a ground-colour of pale reddish-brown, which is thickly covered over with blotches and specks of dark red-brown. The average measurements of four were, length, 2.75in.; breadth, 1.92in. Captain Fairchild has also found it breeding still more abundantly on Macaulay Island. On one of his visits he brought back with him two young birds, barely one-third grown. They were most quaint and comical-looking objects, being densely covered with long white down, with a pink flush, and with heads and beaks altogether out of proportion to the size of the body. Their appetite for fish was truly enormous, and it was most amusing to see them swallow with the greatest ease sprats and herrings almost as large as themselves, and yet always be ready for more.



27. WANDERING ALBATROS (*Diomedea exulans*, L.).

I noticed several individuals from the deck of the "Stella" during my voyage to and from the islands in 1887, and Mr. Bell informs me that it breeds on the Chanter Islands, a group of small rocks on the eastern side of Sunday Island.

28. MOLLYMAWK (*Diomedea melanophrys*, Boie).

This was plentiful at sea everywhere in the vicinity of the islands, and no doubt breeds on some of the isolated rocks.

29. SOOTY ALBATROS (*Diomedea fuliginosa*, Gml.).

I noticed a single specimen at sea between Sunday and Macaulay Islands. Other species of this genus no doubt visit the group, but it is difficult to secure specimens, and it is not easy to identify them on the wing.

30. CAPE PIGEON (*Daption capensis*, L.).

Plentiful at sea all round the group—in fact, one of the commonest petrels at the time of my visit in August, 1887. However, Mr. Bell is of opinion that it does not breed on any of the islands.

31. COOK'S PETREL (*Estrelata cookii*, Gray).

Not uncommon during the summer months, arriving about the beginning of November, and leaving again at the end of April. It breeds on Meyer Island, and more sparingly on Sunday Island, generally in company with *Puffinus assimilis*. It constructs a burrow sometimes over a yard in length, depositing a single pure-white egg at the extremity. Three of these sent to me by Mr. Bell measured 2.0in. in length by 1.5in. in breadth.

32. *ESTRELATA* sp.

I am indebted to Mr. Bell for several specimens (most of them immature) of a handsome species of this genus which I am unable to identify. The forehead, back of the neck, and all the under-surface are pure-white; crown of the head black; primaries and secondaries black on their outer edges, becoming much paler towards the inner part of the webs; shoulders and back brownish, each feather tipped with pale-grey; tail-feathers greyish-brown. Total length, 18.75in.; wing from flexure, 12.3in.; bill, along the curve of the upper mandible, 1.65in.; lower mandible, 1.75in.; tail, 5in.; middle toe and claw, 2in.; tarsus, 1.5in. Bill black, feet with the claws and end of the webs black, lower part and tarsi yellowish. Evidently closely allied to *CE. lessonii*, but differing in the dark colour of the head and in the darker back. Its measurements are very close to those of *CE. les-*

*sonii*. Mr. Bell informs me that it is by no means common. It arrives about the end of September, and remains until the end of June, being one of the last petrels to leave the island. It is solitary in its habits, and very seldom can two nests be found in the same locality. Its breeding-place is usually near the mountain-top, in some dark gully filled with palms and fern-trees, and generally its burrow is made at the roots of the latter. It is purely nocturnal in its habits, and rarely leaves its burrow during the daytime. An egg sent to me by Mr. Bell measured 2.5in. in length by 1.9in. in breadth, and is pure-white in colour.

### 33. KERMADEC MUTTON-BIRD (*Estrelata mollis*, Gould).

This species, which Sir W. L. Buller informs me is the same as *Estrelata mollis*, is the "mutton-bird" of the Kermadec settlers, also sometimes called "piakoia" in imitation of its cry. It arrives in immense numbers at the end of August or early in September, and breeds all over the island, but most abundantly towards the tops of the hills. Unlike most of the other petrels, it makes no burrow, but lays its single egg in a hollow at the root of a tree, or even anywhere on the bare ground. During the middle of the breeding-season they are present in extraordinary numbers, many parts of the island being converted into vast breeding-grounds. The young birds are used for food, being taken just when they commence to lose their down. They are salted and smoked, or pickled in brine. During the spring of 1889 the settlers on Sunday Island, including the Bell family and those occupying Denham Bay, collected and preserved for winter use over twelve thousand of these birds.

### 34. WINTER MUTTON-BIRD (*Estrelata* sp.).

Mr. Bell distinguishes between this bird and the preceding one. According to him, the winter mutton-bird breeds only on Meyer Island and other outlying rocks—never on the main island; and its breeding-season is during the winter months, the young birds being nearly ready to depart when the true mutton-bird arrives. I find but little difference between the two species, save that this has a more distinct dark band across the breast. At the time of my visit (August, 1887) the slopes of Meyer Island were crowded with nearly full-grown fledglings, sitting at the roots of the trees. At our approach they uttered hoarse cries, and endeavoured to escape by rolling down the hill, the old birds circling about among the trees above our heads.

### 35. *ESTRELATA NEGLECTA*, Schl. (?)

This petrel is assigned to the Kermadec Islands in the late Mr. G. R. Gray's hand-list of birds. I mention it here because

Mr. Bell has given me notes of a species which must be closely allied to it, if not the same, and which breeds on Sunday Island in the months from October to January. I have seen no specimens.

36. PUFFINUS CARNEIPES, Gould.

I am not quite certain whether this species is correctly identified, all my specimens being fledglings that have not yet lost their down. Mr. Bell gives it the name of the "black burrower," and states that it arrives in the month of October in each year, often in very large numbers. It digs out burrows, often several feet in length, on the edges of the cliffs, or on the margins of inland terraces. In some places the burrows are so numerous as to prove serious impediments to the traveller, the soft ground above them yielding to his weight, and allowing him to drop through up to his knees. The eggs are pure-white, and measure 2.75in. in length, by 1.7in. in breadth.

37. PUFFINUS CHLORORHYNCHUS, Less.

I have received a single specimen of this species from Mr. Bell, collected somewhere on Sunday Island, but unaccompanied with any information.

38. PUFFINUS ASSIMILIS, Gould.

This species was collected in the Kermadec Islands by Mr. McGillivray, naturalist to H.M.S. "Herald," as far back as 1854. At the time of my visit to the group great numbers were breeding on Meyer Island, and I secured several specimens, together with eggs. These last average 2.11in. in length by 1.4in. in breadth, and are pure-white when freshly laid. The bird digs out burrows for its nest, often of considerable length.

39. PUFFINUS sp.

I have the dried head of a species of *Puffinus*, which may be *P. obscurus*, Gml.

40. STORMY PETREL (*Pelagodroma marina*).

This was common at sea all round the islands at the time of my visit. Mr. Bell informs me that it breeds on Meyer Island and on other outlying rocks.

In addition to the above, Mr. Bell has furnished me with notes of the plumage, &c., of at least five other petrels, but until specimens are obtained it is not possible to identify the species.