

THE BIRDS OF LORD HOWE AND NORFOLK ISLANDS.

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The literature relative to the birds of Lord Howe and Norfolk Islands is by no means voluminous, and is at the same time so scattered that no little research is required to arrive at a knowledge of what has already been chronicled.

In his 'Handbook of the Birds of Australia,' (Vol.ii., Appendix, pp.526-550: 1864) Gould described four species from Norfolk Island; one (the extinct *Nestor productus*) from Phillip Island; and three from Lord Howe Island, all of which had been figured in the folio edition.

In his 'Tabular List of the Birds of Australia' (1888), Ramsay enumerated 28 species for Lord Howe Island, 14 for Norfolk Island, and 14 common to both islands. Many of these species, however, especially those recorded from Lord Howe Island, are merely casual visitors.

The principal descriptive articles relative to the nests and eggs of the birds found breeding on these islands are the following:—

(1) CROWFOOT, W. M., M.D.—“Notes on the Breeding Habits of certain Sea-birds frequenting Norfolk Island, and the adjoining Islets.” *Ibis*, iii., 5th ser., p.263, 1885.

(2) NORTH, A. J.—“Nests and Eggs of Birds found breeding on Lord Howe and Norfolk Islands.” *Aust. Mus. Cat.* No.12, Appendix, p.372 and p.407, 1899. [Two separate articles.]

(3) NORTH, A. J.—“Notes on the Oology of Lord Howe Island.” *Aust. Mus. Memoirs*, No.2, Lord Howe Island, 1889.

The first of these articles is based entirely upon information furnished to Dr. Crowfoot by Dr. P. H. Metcalfe, Resident Medical Officer at Norfolk Island, to whom also North acknow-

ledges his indebtedness for the bulk of the information relative to the land-birds of Norfolk Island contained in his several papers. The particulars relative to the Lord Howe birds were for the most part furnished by Messrs. R. Etheridge, J. A. Thorpe, and T. Whitelegge, who paid a visit of investigation to that island in 1887, on behalf of the Trustees of the Australian Museum.

In his work on the 'Nests and Eggs of the Birds of Australia,' published in 1901, A. J. Campbell makes occasional reference to the Lord Howe or Norfolk Island habitat of certain species common to the mainland also.

In the Proceedings of the Linnean Society of New South Wales (Vol. ii., 2nd series, p.678, 1887), Dr. Ramsay described the eggs of three species of sea-birds from "Lord Howe's Island," viz.: *Sterna* (*Onychoprion*) *fuliginosa*, *Procelsterna* (*Anous*) *cinerea*, and *Sula cyanops*.

There is also an interesting paper by Dr. Ramsay entitled "Notes on the Zoology of Lord Howe's Island" (Proc. Linn. Soc. N. S. Wales, Vol. vii., p.86, 1882). This paper is principally devoted to the avifauna, and a Table of the birds found on the island is appended, showing the occurrence of the same genera or species in New Zealand and New South Wales respectively.

There are other descriptions of, or references to, the birds found in these islands and their eggs, scattered through the files of the Ibis, Proceedings of the Zoological Society (Lond.), Proceedings of the Linnean Society of New South Wales, the British Museum Catalogue of Birds' Eggs, and other scientific publications. There is a paper on the Birds of Norfolk Island by Herr A. von Pelzeln (Sitzungsber. Wien. Akad. xli. 1860, pp.319-332), no copy of which is obtainable in Sydney.

In the following pages, references are given to most of the publications where mention is made of the occurrence, at the Lord Howe or Norfolk Island Groups, of species not peculiar to those groups. Of the peculiar species references are given to the most important articles, descriptive of the birds or their eggs, but these references do not pretend to be in any way complete.

For the sake of brevity, references to the principal articles are given hereafter as follows—Gould; Crowfoot; Ramsay; North, 'Nests and Eggs'; North, 'Lord Howe Island'; Etheridge, 'Lord Howe Island'; Campbell.

It has been my good fortune to spend a few weeks on these Islands. In 1907 I visited Lord Howe Island, remaining there from the 3rd to the 17th of October; and in 1908 I spent from the 8th of October until the 15th of November at Norfolk Island. My primary object was to see the immense flocks of Terns, Noddies, and other sea-birds during the breeding season, but at the same time I was enabled to glean some information and to make personal observations as to the land-birds.

Lord Howe Island is situated in lat. $31^{\circ} 33' S.$, and long. $159^{\circ} 5' E.$ It is about 450 miles north-east of Sydney, and 300 miles from Port Macquarie, the nearest point of the continent of Australia in a direct line. It is nearly seven miles in length, and about one mile in average width. It is crescent-shaped, the two horns or points being connected by a coral-reef enclosing an extensive and shallow lagoon. The superficial area of the Island is about 3,220 acres. The group consists of Lord Howe Island proper, a small islet immediately detached from its southern extremity, called Gower Island; a similar one to the north known as the Sugar Loaf; to the east, separated by somewhat more than half a mile of water, another, named Mutton Bird Island; whilst on the western side, within the Lagoon, is Goat Island. To the north-east of the main Island, from a quarter of a mile to nearly a mile distant, is a cluster of six rocky islets, known as the Admiralty Islets. Still further north lie two other rocks, one being called North Island. About 18 miles to the south, the extraordinary steeple-rock, called Ball's Pyramid, towers to a height of 1,800 feet from the ocean. It is quite inaccessible to human beings, but is the haunt of numerous sea-birds.

The main Island consists of three groups of basaltic hills, connected by two sandy flats covered with dense vegetation. The southernmost group contains Mt. Gower, 2,840 feet, and Mt. Lidgbird, 2,500 feet. The former shows a bold face or

precipice almost sheer from the top to the sea, and is visible in clear weather from a distance of 80 miles.

The whole Island, excepting the small settled area, is well covered with *Kentia* Palms, Banyans, and other trees, and in many places the undergrowth and tangled vines make progress through the bush difficult and at times impossible.

Norfolk Island is situated in lat. $29^{\circ} 3' S.$, and long. $167^{\circ} 38' E.$, and is about 950 miles from Sydney. The group consists of Norfolk Island, about $4\frac{1}{2}$ miles in length by 5 miles in breadth, irregularly square-shaped. Nepean Island, a flat-topped rocky islet, lies a quarter of a mile to the south-east; Phillip Island, about a mile and a half in length by three-quarters of a mile in breadth, lies three miles to the southward. There are twelve small rocky islets to the north, and some scattered rocks to the south of Norfolk Island.

The coast-line of Norfolk Island is bold and steep, rising sharply from 100 to 300 feet, except at the three practicable landing-places, Kingston, Cascade, and Ball Bay. Even at these places the steep hills rise very close to the shore. The whole Island is of basaltic formation, consisting of a succession of rounded hills with deep gullies between, and in the north-western corner Mount Pitt rises to an altitude of 1,044 feet. From the "mountain" and the coastal hills very deep gullies, densely wooded, run down to the coast, in many instances terminating in a sheer cliff descending to the sea. Those at the back of Mt. Pitt, descending to Anson Bay and Duncombe Bay, are the steepest and most heavily timbered, huge pines (*Araucaria excelsa*), white oaks (*Lagunaria Patersoni*), ironwoods (*Notelaea longifolia*), and bloodwoods (*Baloghia lucida*), grow so close together that their spreading branches become interwoven, forming deep shade in which the rank undergrowth flourishes. Tangled vines, as thick as a man's arm, depend from the branches, and lie twisted along the ground. Fortunately, there are excellent roads forming a perfect network over the whole Island, and many tracks have been cut through the timber to give access to the various surveyed blocks, but the growth of the vegetation is

so rapid that unless regularly cleared the tracks soon become obliterated.

A glance at the chart compiled by Chas. Hedley, of the Australian Museum,* shows that Lord Howe Island lies on the extreme south-west, and Norfolk Island on the eastern extremity of the "Limit of Continental Area," and the route of migration of fauna from Antarctica is shown as passing through New Zealand and Norfolk Island, with a lateral branch to Lord Howe Island. So far as regards the avifauna breeding on the two last-mentioned islands, of 42 species, 11 are Australian, 2 are New Zealand, and 9 are common to both; the remaining 20 species being peculiar. Only two birds are found breeding in common in New Zealand and both Islands under review, viz., *Halcyon vagans* and *Hypotaenidia philippinensis*. *Porzana plumbea* and *Porphyrio melanonotus* breed both in New Zealand and Norfolk Island, while the latter species is recorded as a casual visitor to Lord Howe Island. There is, moreover, a marked similarity between the species peculiar to each of the two Island groups; one species (*Aplonis fuscus*), not found elsewhere, is common to both; and, in general, it may be said that the whole avifauna of these islands is more distinctly Australian in character, although the Wood Hen (*Ocydromus sylvestris*) and the extinct *Notornis alba* and *Nestor productus* may be regarded as of greater value in determining the original route of emigration.

In the following pages I have endeavoured to give a complete list of all the birds recorded or observed as breeding in or visiting these island-groups. The habitat is given for either or both islands, as the case may be, and the species not known to have bred at any time in the locality are described as "visitors only." The habitat outside the groups under review is given in brackets, the particulars being taken from Gregory Mathews' 'Hand-List.' The species are arranged in the same order, and numbered as in the Hand-List. The authors' vernacular names are given,

* Hedley, C., "A Zoogeographic Scheme for the Mid-Pacific." Proc. Linn. Soc. N. S. Wales, 1899, p.391.

followed by the local vernacular names which, it will be noted, frequently differ in regard to the same species in each island.

The dimensions of eggs are given in inches and 100ths, and, unless otherwise stated, are from specimens measured by myself.

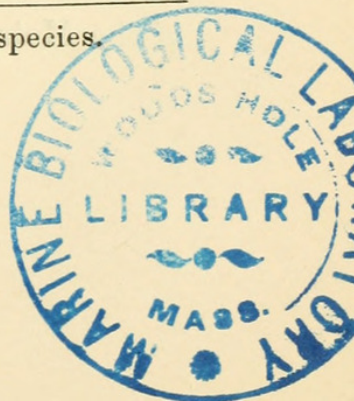
The following table shows all the species which, to the best of my knowledge, actually breed on these Islands:—

Table of Species.

Genus.	Species.		See Note.
	Lord Howe Island.	Norfolk Island.	
<i>Chalcophaps</i>	<i>chrysochlora</i>	<i>chrysochlora</i>	A.
<i>Hypotaenidia</i>	<i>philippinensis</i>	<i>philippinensis</i>	A., N.Z.
<i>Porzana</i>	—	<i>plumbea</i>	A., N.Z.
<i>Porphyrio</i>	—	<i>melanonotus</i>	A., N.Z.
<i>Ocydromus</i>	<i>sylvestris</i>	—	P.
<i>Puffinus</i>	<i>chlororhynchus</i>	<i>chlororhynchus</i>	A.
"	—	<i>assimilis</i>	A.
"	—	<i>griseus</i>	A., N.Z.
"	<i>tenuirostris</i>	—	A., N.Z.
<i>Æstrelata</i>	<i>neglecta</i> (?)	<i>neglecta</i> (?)	A., N.Z.
<i>Sterna</i>	<i>fuliginosa</i>	<i>fuliginosa</i>	A.
<i>Procelsterna</i>	<i>cinerea</i>	<i>cinerea</i>	A., N.Z.
<i>Anous</i>	<i>stolidus</i>	<i>stolidus</i>	A.
<i>Micranous</i>	—	<i>leucocapillus</i>	A.
<i>Gygis</i>	—	<i>alba</i>	A.
<i>Anas</i>	—	<i>superciliosa</i>	A., N.Z.
<i>Sula</i>	<i>cyanops</i>	<i>cyanops</i>	A.
<i>Phaëthon</i>	<i>erubescens</i>	<i>erubescens</i>	P.
<i>Ninox</i>	<i>albaria</i> P.	<i>boobook</i>	A.
<i>Platycercus</i>	—	<i>elegans</i>	A.
<i>Cyanorhamphus</i>	—	<i>cooki</i>	P.
<i>Halcyon</i>	<i>vagans</i>	<i>vagans</i>	N.Z.
<i>Chalcococcyx</i>	—	<i>lucidus</i>	A., N.Z.
<i>Petræca</i>	—	<i>multicolor</i>	P.
<i>Gerygone</i>	<i>thorpei</i>	—	P.
<i>Pseudogerygone</i>	<i>insularis</i>	<i>modesta</i>	P.
<i>Rhipidura</i>	<i>macgillivrayi</i>	<i>pelzelni</i>	P.
<i>Diaphoropterus</i>	—	<i>leucopygius</i>	P.
<i>Merula</i>	<i>vinotincta</i>	<i>fuliginosa</i>	P.
<i>Pachycephala</i>	<i>contempta</i>	<i>xanthoprocta</i>	P.
<i>Zosterops</i>	<i>tephropleura</i>	<i>tenuirostris</i>	P.
"	<i>strenua</i>	<i>albigularis</i>	P.
"	—	<i>cærulescens</i>	A., N.Z.
<i>Aplonis</i>	<i>fuscus</i>	<i>fuscus</i>	P.
<i>Strepera</i>	<i>graculina</i>	—	A.

Note.—A.=Australian species. N.Z.=New Zealand species.

P.=Peculiar to the Island.



COLUMBIFORMES.

30a(M). 1. HEMIPHAGA SPADICEA Latham.

Hab.—Norfolk Island (extinct).

For figure and references, see Rothschild's "Extinct Birds," p.161, pl.xxi., 1907.

36(M). 2. CHALCOPHAPS CHRYSOCHLORA Gould.

Little Green Pigeon ; Pigeon (Lord Howe Island); Dove (Norfolk Island).

Chalcophaps chrysochlora, Ramsay, p.38; North, 'Nests and Eggs,' p.373; North, 'Lord Howe Island,' p.45; Etheridge, 'Lord Howe Island,' p.10; Campbell, p.679.

Hab.—Lord Howe and Norfolk Islands. (Northern and Eastern Australia, Molucca Is., New Hebrides, Solomon Is.).

The beautiful Little Green Pigeon is very plentiful in both Islands; and is so tame, at Lord Howe Island, that it can easily be snared by a noose at the end of a stick. At Norfolk Island it is protected against indiscriminate destruction, exception being made in favour of invalids who may require some such delicate morsel as a roasted pigeon to tempt the appetite!

Its nest is generally placed amongst vines, or on the horizontal branch of a tree from five to ten feet from the ground. It is constructed of the spiral tendrils of dead vines and thin twigs, forming a slight platform, through the interstices of which the creamy-white eggs can be plainly seen from beneath.

At Lord Howe Island I found a nest on the 5th of October, 1907, containing two highly incubated eggs; and on the 18th of the same month, I found two nests containing young birds about a week old. Fresh eggs were found at Norfolk Island in October and November, 1908, but the general breeding season appears to be during August and September.

Archdeacon Comins informed me that this pigeon is not indigenous to Norfolk Island, but was introduced from the Solomon Islands, some years ago, by the late Archdeacon Palmer of the Melanesian Mission. From the fact that it is common to

Australia, Lord Howe, and the New Hebrides Islands, one would naturally expect to find it at Norfolk Island.

One of the most charming sights in these beautiful islands is a pair of these pigeons walking tamely about under the palms and tree-ferns, or taking short flights amongst the low branches, the sun glinting from the bronze-green plumage as the birds turn sharply in their erratic flight.

The call of this bird is an oft-repeated and somewhat monotonous "Coo-coo." A solitary bird will sit amongst the dense foliage of a large forest-tree, with its breast resting on a branch, emitting its cry at frequent intervals for an hour or more. Dimensions of eggs: (1) 1.05×0.8 (L.H.I., 5th Oct., 1907); (2) *a*, 1.1×0.9 ; *b*, 1.04×0.84 (N.I., 25th Dec., 1908).

38(M).

3. PHAPS ELEGANS Temminck.

Brush Bronze-wing Pigeon.

Hab.—Lord Howe Island (accidental). (Australia generally, Tasmania).

A single specimen arrived at Lord Howe Island early in 1907, in a very exhausted condition. It was captured by Mrs. Nichols, who had it in captivity when I visited the island in October, 1907.

RALLIFORMES.

49(M).

4. HYPOTÆNIDIA PHILIPPINENSIS Linnæus.

Pectoral Rail; Rail (L.H.I.); Little Tarler Bird (N.I.).

Hypotænidia philippensis Ramsay, p.38; Etheridge, 'Lord Howe Island,' p.11; Campbell, p.740.

Hab.—Lord Howe and Norfolk Islands. (Australia generally, Tasmania, New Zealand, Malay Archipelago, &c.).

This Land Rail is found on both islands, although it is stated (Etheridge, L.H.I., p.11) to have been introduced into Lord Howe Island. Mrs. Nichols, a very old resident, informed me that it was introduced by the late T. R. Icely when Visiting Magistrate there.

It frequents a few reedy patches in the settled part of the Island. I saw only a single bird during my visit; but was informed by Mr. J. B. Waterhouse that it bred there.

At Norfolk Island it is found in the Taro patches growing in the creeks and in the vicinity of the Mission dam. A clutch of eight eggs, forwarded to me by a young collector who took them on the 5th December, 1908, are of the usual type, but of a rather reddish-yellow ground, owing doubtless to the red soil. Dimensions: (a), 1.56×1.16 ; (b), 1.50×1.16 ; (c), 1.49×1.16 ; (d) 1.46×1.16 ; (e-f), 1.45×1.14 ; (g) 1.4×1.12 ; (h) 1.4×1.11 .

52a(M).

5. OCYDROMUS SYLVESTRIS Sclater.

Rufous-winged Moorhen; Wood Hen(L.H.I.).

Ocydromus sylvestris Sclater, P.Z.S. 1869, p. 472; North, 'Nests and Eggs,' p.414; Etheridge, 'Lord Howe Island,' p.13; North, Rec. Aust. Mus. i., p.37(1890).

Hab.—Lord Howe Island.

It was not my good fortune to see any specimens of this bird, which is so closely allied to the New Zealand Weka. Its habitat is amongst the rugged and almost inaccessible parts of Lord Howe Island. North says*:—"Here the rough character of the country, consisting of huge boulders of granite [? basalt] almost hidden in a dense and luxuriant mass of subtropical vegetation, affords it a secure retreat." A nest found in October, 1889, 'at the head of the Erskine Valley' (a high ridge connecting Mount Lidgbird with Mount Gower) "consisted merely of a depression in a thick débris of fallen leaves, under the shelter of a low bush. The eggs, four in number, vary in shape from ovals to lengthened ovals, being slightly pointed at one end, and are of a dull white, with minute dots and large irregular shaped markings of light chestnut-red more or less scattered over the surface of the shell, obsolete markings of the same colour predominating towards the larger end. They are not unlike very large specimens of *Hypotaenidia philippensis*, . . . but the markings are paler and

* Nests and Eggs, p.414.

not so well defined.* Length (A) 1.9×1.32 ; (B) 1.88×1.36 ; (C) 1.95×1.36 ; (D) 2×1.32 inches."

This bird is, like its New Zealand congener, very curious, and will come out of its retreat to investigate any unusual sound, such as that caused by knocking two stones or dry sticks together. It can then be easily snared or shot. It is becoming very scarce in the more settled parts of the island, the dogs and pigs destroying birds and eggs. Messrs. Hedley and McCulloch, of the Australian Museum, who made the ascent of Mount Gower in September, 1908, informed me that the Wood Hen was fairly plentiful in the Erskine Valley, and on the slopes of the mountain.

55(M).

6. PORZANA PLUMBEA Gray.

Spotless Crake; Little Tarler Bird(N.I.).

Ortygometra tabuensis Gm., North, 'Nests and Eggs,' p.415; *Porzana tabuensis* Gm., Campbell, p.748.

Hab.—Norfolk Island. (Australia generally, New Zealand, Philippine Islands).

Although the Spotless Crake enjoys such a wide range throughout Australia and adjacent countries, it is not found on Lord Howe Island. At Norfolk Island it is a rare species, and the islanders do not appear to have distinguished it from the Pectoral Rail, as both birds bear the local appellation of Little Tarler(Taro) Bird. North records the finding, by Dr. Metcalfe, of an old nest with an egg in it, and I have another single egg taken from a nest in a "drain" (natural watercourse) in the 100-acre Reserve at Norfolk Island, on the 1st of March, 1909. My collector informed me that the nest was constructed of flags "like a Titerack's" (*Micranous leucocapillus*), and placed in the fork of a

* I have recently received a pair of eggs taken by Mr. Herbert Wilson on the 9th November, 1909. The nest was of *Kentia* palm thatch, in a hollow on the ground. The shell is glossy, pinkish-white, with red-brown spots and freckles, and more numerous suffused purplish spots scattered over the whole shell, but predominating at the larger end. Dimensions: (a) 2×1.38 , (b) 2×1.36 .

Taro plant. This egg is nearly elliptical in form, glossy, surface finely pitted; of a buff ground-colour thickly covered with pale reddish and less frequent dark reddish markings, the latter approaching the form of longitudinal streaks. Dimensions: 1.15×0.95 .

62(M). 7. PORPHYRIO MELANONOTUS Temminck.

Bald Coot; Satin Bird(L.H.I.); Tarler Bird(N.I.).

Porphyrio melanotus Gould, p.321; Ramsay, p.38; North, 'Nests and Eggs,' p.415; Etheridge, 'Lord Howe Island,' p.11; *P. melanotus* Campbell, p.757.

Hab.—Lord Howe and Norfolk Islands. (Australia generally, Tasmania, New Zealand, New Guinea, Moluccas).

The Bald Coot is not uncommon at Norfolk Island, where it breeds in the creeks and swampy places. Its Norfolk Island local name is a corruption of "Taro" Bird, as it frequents the patches of wild Taro growing in the watercourses. I did not find any nests, but was informed that many young birds were seen in the creeks during the 1908 season. Dr. Metcalfe states that on Norfolk Island the number of eggs laid by this bird is twelve or more(North).

It is only occasionally seen at Lord Howe Island, and I believe there is no record of its having bred there.

63(M). 8. NOTORNIS ALBA White.

White Gallinule.

Notornis alba Ramsay, p.38.

Hab.—Lord Howe Island (extinct).

A great deal has been written about this remarkable bird, and a summary of the references, together with a plate, are contained in Rothschild's "Extinct Birds."

Although generally believed to be absolutely extinct, I should not be surprised to hear of a specimen being taken in the recesses of the mountains, many parts of which have not yet been explored.

PROCELLARIIFORMES.

79(M). 9. PUFFINUS CHLORORHYNCHUS Lesson.

Wedge-tailed Petrel; Little Mutton Bird(L.H.I.).

Puffinus sphenurus Gould; Ramsay, p.38; North, 'Nests and Eggs,' p.37; North, 'Lord Howe Island,' p.47; Etheridge, p.14.

Hab.—Lord Howe and Norfolk Islands. (Australian Seas, Indian Ocean, Pacific Ocean).

The Wedge-tailed Petrel breeds on Nepean Island, which is so honeycombed that it is dangerous to walk over some parts, the thin crusts over the burrows being insufficient to support one's weight. The northern slopes of Phillip Island are similarly riddled, and many birds breed in the shallow holes drilled in the slight soil covering the rocky islets to the north of the main island. I found a pair preparing their burrow on the Redstone in October, 1908.

At Lord Howe Island it breeds on Goat Island in the Lagoon, Mutton Bird Island, and on the Admiralty Islets. Although I was too early to find any eggs, I surprised some birds in the act of clearing out the old burrows preparatory to laying.

I received several eggs from Mrs. Nichols taken in December, 1907. Dimensions: (a) 2.5×1.66 ; (b) 2.25×1.58 (L.H.I., Dec., 1907).

Sir Walter Buller expressed the opinion that Dr. Crowfoot's *P. sphenurus* is *P. griseus*. Crowfoot gave the dimensions of eggs of *P. sphenurus* as varying from 2.5 to 2.75 inches in length, and from 1.5 to 1.75 inches in breadth. These dimensions are sufficiently wide to embrace both species.

80(M). 10. PUFFINUS ASSIMILIS Gould.

Allied Petrel; Lao(N.I.).

Puffinus assimilis Crowfoot, p.269; *P. nugax* Soland., North, 'Nests and Eggs,' p.377; Ramsay, p.38.

Hab.—Norfolk Island. (Australian Seas, Atlantic Ocean).

The Allied Petrel breeds on Phillip and Nepean Islands, and on the rocky islets on the northern side of Norfolk Island, during

the months of July and August. On the 28th October, 1908, I visited the Redstone, one of the latter islets, and found the shallow nesting holes of this Petrel deserted, although one recently dead young bird was lying in a hole. No doubt this was a late hatched bird, abandoned by its parents at the time of the general migration. The Wedge-tailed Petrels were arriving at the date of my visit, and had commenced to dig out their burrows.

The Allied Petrel lays a single egg on the sand in a shallow burrow, or under an overhanging rock. It is pure white, rather graceful in shape, and inclined to be pointed at the ends. Dimensions of two specimens presented to me by Dr. Metcalfe: (a) 2.04×1.38 (taken 25th July, 1901); (b) 1.94×1.4 (taken 23rd July, 1892).

82(M).

11. *PUFFINUS GRISEUS* Gmelin.

Sombre Petrel; Ghost Bird(N.I.).

Puffinus sphenurus, Crowfoot, p. 268.

Hab.—Norfolk Island. (Australian Seas, Atlantic Ocean, Pacific Ocean).

This bird breeds extensively on the high land about Anson Bay, Norfolk Island, in the vicinity of the Cable Station. The local name of this bird is derived from its weird and mournful cry. I have eggs of this species taken by Master Jack Jacobs, during December, 1908, in this locality. Dimensions: (a) 2.58×1.78 ; (b) 2.6×1.6 .

84(M).

12. *PUFFINUS TENUIROSTRIS* Temminck.

Short-tailed Petrel (Mutton Bird); Mutton Bird(L.H.I.)

Nectris brevicaudus Brandt, Ramsay, p.38; North, 'Nests and Eggs,' p.378; North, 'Lord Howe Island,' p.47; Etheridge, 'Lord Howe Island,' p.14.

Hab.—Lord Howe Island. (Australian Seas, Pacific Ocean, New Zealand, N. to Japan).

This Petrel, the "Mutton Bird" of Tasmania, breeds in large numbers on Lord Howe Island, its chief "rookery" being in the sandy soil of the eastern side of the Island. There is a beautiful

palm-glade here, where the interlaced foliage overhead is so thick that the sun's rays do not penetrate it, and the islanders have given this spot the somewhat gloomy name of the "Valley of the Shadow of Death." At night time, during the months of October, November, and December, this Valley is full of weird moanings and wailings, enough to make one's flesh creep. They are, however, only the conversational efforts of the Mutton Birds as they meet a friend (or foe) when digging their burrows, or coming in from the day's feeding. The unwary visitor frequently plunges through the thin layer of sand over these burrows, which extend in some cases to a distance of ten feet from the entrance. A single egg is laid at the end of the burrow during the last week of November. It is pure white, generally pointed oval in shape, but varying occasionally to an almost elliptical form. The size also varies considerably. Dimensions of two specimens selected from a number taken by Mrs. Nichols in December, 1907: (*a*), 2.8×1.8 (pointed oval); (*b*), 2.5×1.7 (elliptical).

88(M). 13. *Majaqueus æquinoctialis* Linnæus.

Spectacled Petrel.

Majaqueus gouldii Hutton, Ramsay, p.38.

Hab.—Lord Howe Island. (Australian Seas, Atlantic Ocean).

This bird appears to be merely a visitor to the seas adjacent to Lord Howe Island. There is no evidence of its having bred either on this Island or on Norfolk Island.

95(M). 14. *Æstrelata neglecta* Schlegel.

Big Hill Mutton Bird (L.H.I.).

Procellaria phillipii Gray.

Æstrelata phillipii G. R. Gray, North 'Nests and Eggs' p.416; Hutton, "Petrels of the Kermadec Islands," Proc. Zool. Soc., iv. p.755(1893).

Hab.—Lord Howe Island, Norfolk Island. (New Zealand, Kermadec Islands).

According to Hutton, on the authority of Cheeseman, *Æstrelata neglecta* breeds in the open, and does not burrow like other

petrels. It is known that this species and *Æ. neglecta* var., Hutton, are variable species as regards colour.

An adult and a young bird out of the birds breeding on Mount Gower (Lord Howe Island) were procured by Messrs. Hedley and McCulloch, of the Australian Museum, in September 1908. These were identified by Mr. A. J. North as *Æ. neglecta*. The adult bird does not accord with any of the published descriptions of *Æ. neglecta* to which I have had access, the back being bluish-black, the head sooty-brown, breast brown, throat washed darker, feathers surrounding the bill tipped with white, all feathers white underneath, bill and feet black.

Mr. Herbert Wilson, of Lord Howe Island, who has frequently observed the local bird breeding, informs me that he never saw it in any but the dark colour. The nest is composed of "cut grass" or small fibrous roots, placed in a chamber at the end of a burrow, from two to four feet in length, or in a deep crevice in the rocks. In some cases the mass of nest-material is so large, that the young bird is almost concealed in it. The parent bird can be attracted to the entrance of the burrow by a "cooe" from outside; and when molested she bites savagely. The breeding season is during July and August, fairly large numbers frequenting the top and south-western slope of Mount Gower, at an altitude of over 2000 feet above sea-level. Formerly, it is stated, this bird bred lower down, but the pigs drove them to less accessible situations.

With regard to the Norfolk Island bird, (*Æ. phillipii*) North states*: "This species Dr. Metcalfe informs me is very difficult to procure on account of its nocturnal habits, and is only to be obtained about January, when it resorts to the west side of the Island to breed, depositing a single egg at the end of a burrow in the sandy soil. During a period of ten years he has only obtained two birds and three eggs, one of the latter of which he has kindly forwarded; it is ovoid in form, of a dull white, the surface of the shell having numerous shallow pittings, although smooth to the touch, and presenting a glossy appearance. Length 2.14 x 1.16 inches*."

* Nests and Eggs, p.416.

With every possible deference to the authorities who have merged *Æ. phillipii* into *Æ. neglecta*, and to the identification of the Lord Howe Petrel by Mr. North, I am of opinion that the birds represent four distinct species. Further information as to the description and habits of *Æ. neglecta* may be anticipated from the investigations of Messrs. T. Iredale and party, who spent nearly the whole year 1908 on the Kermadecs. I have several eggs of the two Kermadec Island species, presented to me by Mr. Iredale, the dimensions of which are as follows:—*Æ. neglecta* (Sunday Island): (a) 2.45×1.67 ; (b) 2.44×1.78 ; (c) 2.6×1.85 (5th Nov., 1908). *Æ. neglecta*, var. (Meyer Island): (a) 2.48×1.62 ; (b) 2.47×1.86 (24th April, 1908).

The following table shows the marked dissimilarity in the four birds, their habits, and the dimensions of their eggs:—

Species.	Bird.	Nest.	Egg.	Breeding season.
Lord Howe Petrel.	Uniform in colour.	At end of a burrow.	...	July-August.
Norfolk Island Petrel.	"	"	2.14×1.62	January.
<i>Æ. neglecta</i> (Sunday Island)	Very variable in colour.	In the open.	$2.44-2.6 \times 1.67-1.85$.	October-November.
<i>Æ. neglecta</i> var. (Meyer Island)	"	"	$2.47 \times 1.62-1.86$.	April-May.

105(M).

15. PRION DESOLATUS Gmelin.

Dove-like Prion.

Prion turtur Smith, Ramsay, p.38.

Hab.—Lord Howe Island. (Australian Seas, Antarctic Seas, S. Atlantic Ocean).

Mr. H. Wilson, of Lord Howe Island, informed me that he had occasionally found dead birds of this species on the cliffs of the main Island, and one was found in a dying condition on the Admiralty Islet. He has never found it breeding.

LARIFORMES.

128(M).

16. STERNA FULIGINOSA Gmelin.

Sooty Tern; Wideawake(L.H.I.); Whale Bird(N.I.).

Sterna fuliginosa Crowfoot, p.266; North, 'Nests and Eggs,' p.374; North, 'Lord Howe Island,' p.46; Etheridge, p.15.

Onychoprion fuliginosa, Ramsay, p.38; Ramsay, Proc. Linn. Soc. N.S.Wales, ii. (2nd Ser.), p.678(1887).

Hab.—Lord Howe and Norfolk Islands. (Australia generally, Atlantic, Indian, and Pacific Oceans).

The Lord Howe Islanders' name for the Sooty Tern is said to be derived from a fancied resemblance between its ordinary cry and the word "wideawake," but it might just as well be a reference to its attitude and actions as compared with the stolid Noddy. The name given to it by the Norfolk Islanders is derived from its periods of arrival at and departure from the Island, which are coincidental with those of the whales, the pursuit of which is one of the chief of the island industries.

At both islands I had abundant opportunities of seeing the Sooty Terns in their breeding places, and selecting a fine series of their remarkably variable eggs from many hundreds of thousands scattered about within easy reach.

On the main island of Lord Howe these birds assemble to breed in one restricted locality only, the North Ridge, a steep slope about two miles to the northward of the settled part of the island. The south-western slope of this ridge is covered with thick tussocky grass, amongst which a few basalt boulders protrude their rugged heads; while the north-eastern side descends sharply several hundred feet to the ocean, the cliff being broken by occasional terraces on which the birds find a more or less secure nesting place, though the major part of the colony occupy the south-western slope. During the season, which extends from the middle of September until the end of November, this breeding place is frequently visited, in fact almost daily, by parties of the residents who collect the freshly laid eggs in kerosene tins and buckets. These eggs form an agreeable addition to the food-

supply, and are cooked in various ways, the principal being plain hard-boiled, eaten cold, or made into large omelettes. The albumen when boiled is almost transparent, and of a faint bluish-white, similar to that of the domestic duck's egg, while the yolk is of a deep salmon-pink. They have practically no fishy flavour, and are not so rich as the domestic hen's eggs. I tried them cooked in several ways, and found the cold hard-boiled variety with salad fairly palatable, but on the whole hardly an article of diet to hanker after! The industry of collecting these eggs for food has resulted in the evolution of a local term, viz., "Wide-awakaneggin."

On the North Ridge breeding-place there were probably not more than two thousand birds established, and the periodical collections of eggs would total less than 500 at a time. There is every reason to believe that a bird will lay again very soon after being robbed. I have seen the ground cleared of eggs at ten o'clock in the morning, and by three o'clock in the afternoon a hundred more were laid within the same area. I am inclined to think that this frequent laying of eggs by birds which, in the ordinary course of nature would be satisfied to lay and hatch out one egg in the season, is largely the cause of so much variety in the colour-markings and dimensions of the eggs. Those observed by me on the Admiralty Islets, which are rarely visited, were almost uniformly of the normal type, viz., faintly bluish or white ground, with reddish spots, dashes, or freckles distributed fairly evenly over the whole shell. On the day of my visit to those Islets (16th October, 1907) there were many hundreds of thousands of eggs to select from, and it was with difficulty that I could find a couple of dozen sufficiently well or unusually marked to attract notice. The same may be said of the eggs on the higher parts of Phillip Island off Norfolk Island. On the other hand, the eggs taken from the North Ridge, Lord Howe Island, and from Nepean Island and the more easily accessible islets off Norfolk Island, which are raided almost daily during the season, exhibit the most extraordinary variation in both colour and size. Eggs covered with huge carmine blotches and

streaks, pure white eggs, and others with a deep brownish-red ground spotted with darker markings are quite numerous, while some most remarkable departures from the normal in size and shape are found, mostly towards the close of the season. The latter particularly, to my mind, are strongly evidential of the strain caused by the unnaturally large output of individual birds.

At Norfolk Island the season commences a month or more later than at Lord Howe Island, and continues up to December. The Bird Protection Regulation in force there allows the eggs to be taken without limit from the commencement of the season until the 21st November. On and after that date it is a punishable offence to take any eggs. This is a wise restriction, and its beneficial effects can be seen in the large numbers of birds that breed every year on Nepean Island. Although it is not unusual for a boat-load of 10,000 to 15,000 eggs to be brought in from the Island two or three times a week, there is said to be no apparent diminution in the number of birds breeding there each year. At Lord Howe Island, where there is no restriction, and the birds have practically no rest, the numbers breeding on the main Island are dwindling year by year. Here also, they have another relentless enemy, the hungry semi-wild pig, which will go through the more easily accessible nests and guzzle the eggs, shells and all, and does not stop to inquire whether they are fresh or otherwise.

The Sooty Tern rarely makes any nest-structure. Very occasionally a few grass-stems may be found arranged round a slight depression, but in the vast majority of instances the egg is laid upon the bare soil or sand, or on the natural grass, whichever may be the surface of the spot selected for depositing the egg. On the Admiralty Islet which I visited, there are several broad terraces, with tussock-grass growing amongst the loose stones. Here the Sooty Terns were clustered so closely, each bird sitting on an egg or a chicken, that it was impossible to avoid treading occasionally on the contents of a nest. The loose clayey soil was hollowed out a little where practicable, otherwise

the egg was laid between two small stones, or in the middle of a tussock. In all directions old abandoned eggs could be seen sticking in the earth which had been washed over them by the rain. On Phillip Island I saw in one dry watercourse, thousands of rotten eggs, and many hundreds of dead birds caught in the roots or half buried in the sand. Owing to this Island being almost entirely denuded of undergrowth by the rabbits, the rain very rapidly finds its way into the watercourses, and as the Sooty Tern will not leave its egg, those birds that have selected the soft sandy beds of these watercourses are soon drowned. In the latter part of November, and during the whole of December, 1908, Norfolk Island was visited with an almost unprecedented rainfall. My friend, Mr. Lindsay Buffett, informed me that the resulting mortality amongst the Sooty Terns was enormous.

One egg only is laid for a sitting. Although I saw several birds on the Admiralty Islet sitting on two eggs, and took half-a-dozen of these pairs for examination, in every case one egg proved to be addled, while the other was either fresh or in active process of incubation. The addled egg was doubtless one which had been abandoned, and, owing to the limited space available, the then sitting bird had laid one egg alongside of it, rather than take the trouble to remove it.

The Sooty Terns are not shy, but, when first disturbed, will rise and hover about, scolding vigorously and snapping their mandibles. They soon settle again, and it is not difficult to catch them with the hand.

As previously remarked, the eggs differ greatly in colouring and dimensions, and a large series of selected varieties makes a most striking addition to the cabinet. I have several white or faintly bluish specimens without any trace of markings; then some with a few faint reddish spots or blotches, and others ranging through all gradations of ground-colour and markings up to a terra-cotta ground, thickly sprinkled with blackish-brown and dark red spots and blotches. Some have distinct zones of colour on a white ground; others again bear great masses of

suffused purplish colour, appearing as if beneath the shell, and scattered red spots overlying them. Many are spirally streaked with rich carmine, while others have caps of almost black blotches.

The following are the dimensions of some normal, and some remarkable divergences from the normal, eggs in my collection—(1) 2×1.4 ; (2) 2.39×1.4 ; (3) 1.8×1.35 ; (4) 1.7×1.4 ; (5) 1.45×1.06 ; (6) 1×0.84 ; (7) 2.1×1.4 ; (8) 1.9×1.5 ; (9) 2.55×1.3 (pyriform); (10) 1.46×1 .

132(M).

17. PROCELSTERNA CINEREA Gould.

Grey Noddy; Blue Billy(L.H.I.); Patro(N.I.).

Procelsterna albivitta Gould, p.420.

Anous cinereus, Crowfoot, p.265; Ramsay, p.38; North, 'Nests and Eggs,' p.376; North, 'Lord Howe Island,' p.46; Etheridge, p.15.

Procelsterna cinerea, Cat. Birds Eggs, B.M., i., p.197(1901).

Hab.—Lord Howe and Norfolk Islands. (N. and E. Australia, New Zealand to San Ambrose Islands, S.W. America).

This beautiful little Tern breeds in both groups of islands. At Lord Howe it selects crevices and ledges in the precipitous cliffs on the north-eastern side of the main island, and similar places on the Admiralty Islets. The nests are generally very difficult of access. In the Norfolk group it breeds chiefly on Nepean and Phillip Islands, and on the former the nests are comparatively easy of access, being placed in crevices of the weathered volcanic rock from a few feet to a considerable height from the water-line. Owing to the horizontal position of the strata, and the weathering having formed sloping terraces, the cliffs are not difficult to scale, although the sharp, worn edges and points of rock are unpleasant to hands and knees.

The breeding season commences about the middle of September at Lord Howe Island and a little later at Norfolk Island, and extends over the three following months. The birds do not breed in colonies, but certain spots or localities are more favoured than others. The bird is, however, by no means common in either group.

A single egg is laid for a sitting, and the nest is seldom much more than a depression in the sand which has drifted into the crevice, with a few bits of grass or dry seaweed loosely scattered about. The egg is very fragile, somewhat similar in general appearance to that of the Noddy, but the ground-colour is more a greyish stone-colour. The reddish-brown spots are sparingly distributed over the whole shell, and a few purplish-grey suffused markings are also generally distributed. In shape they are more or less pointed ovals, and they vary considerably in size. Dimensions: (1) 1.7×1.2 (Admiralty Islet, 15/x./07); (2) 1.8×1.2 (Lord Howe I., 26/ix./08); (3) 1.65×1.18 (Lord Howe I., 26/x./08); (4) 1.6×1.16 (Nepean Island, 15/x./08); (5) 1.6×1.12 (Nepean Island, 15/x./08); (6) 1.5×1.12 (Nepean Island, 31/x./08).

133(M).

18. *ANOUS STOLIDUS* Linnæus.

Noddy; Noddy (L.H.I., and N.I.).

Anous stolidus, Crowfoot, p.264; Ramsay, Proc. Linn. Soc. N. S. Wales, ii., 2nd Ser., p.678, 1887; Ramsay, p.38; North, 'Nests and Eggs,' p.375; North, 'Lord Howe Island,' p.46; Etheridge, p.15; Cat. Birds Eggs, B.M., i. p.198, 1901; Campbell, p.851.

Hab.—Lord Howe and Norfolk Islands. (Tropical and juxta-tropical seas of the world).

At Lord Howe Island the Noddy breeds only on the Admiralty Islets, visiting the main island for feeding purposes only. During my visit to the large Admiralty Islet, I found several hundreds of these birds nesting amongst the twisted limbs of some dead shrubs lining the edge of a cliff. The nests were constructed of dry grass and seaweed loosely packed together, with a moderate depression in the centre; they were placed very close together, the shrubs being literally covered with them. Later comers who had failed to secure a branch had fain to be content with the ground beneath the bushes. The eggs were for the most part far advanced in incubation (16/x./07).

At Norfolk Island the Noddy also avoids the main island, breeding only on the rocky islets, Nepean and Phillip Islands. On Nepean Island I saw large numbers of birds on October 15th,

1908, but nesting had not commenced. The birds were very tame, and sat in groups gravely inspecting us a couple of yards distant, as we discussed our lunch. They have an inexpressibly sly look, owing to the white line under the eye.

In this group the nests are most frequently placed on the ground, owing to the absence (except at Phillip Island) of any trees or even shrubs. Dr. Metcalfe (Crowfoot, Ibis) says: "The eggs are not laid in large colonies, but here and there in convenient spots, all over the island. The Noddy always makes some kind of a nest. I have seen it made of dry grass, bits of seaweed, dry sticks or twigs, and fish bones. As a rule there is nothing but a basement made. The material is merely laid in a heap, as it were, in a shallow hollow, and the egg, only one, is laid thereon. In one instance I found a considerable attempt at building a nest on the top of a dead tree-stump, about three feet from the ground; it consisted of a mass of grass, twigs, and seaweed, but there was no interweaving of the materials."

Breeding commences in October and extends into January. The eggs vary from creamy-white to warm pinkish-white, and are generally sparingly marked with brownish-red or dark red spots and blotches, and pale purplish suffused blotches. Occasionally one of these suffused markings is very extensive. As a rule the markings are more frequent at the larger end, but one remarkable specimen I obtained from the Moöo Stone (a rock near Norfolk Island) is heavily blotched with masses of rich yellow-brown and dark brown extending in the form of an irregular zone round the middle of the egg, while a few streaks and spots are sparingly scattered towards the ends, both of which are unmarked. The ground-colour of this egg is a rich cream.

Sometimes these eggs approach rather closely to some of the more sparsely marked eggs of the Sooty Tern, but the collector who has the privilege of "picking over" a boat-load of eggs brought in by the islanders, can always distinguish the species when blowing the eggs, as the yolk of the Noddy's is pale yellow; that of the Sooty Tern's egg being salmon-pink.

The eggs vary in size and shape, but in a far less marked degree than those of the Sooty Tern. I have not found any of abnormally small size. Dimensions: (Nos. 1-5, Admiralty Islet, 16/x./07); (1) 2.2×1.54 ; (2) 2.2×1.4 ; (3) 2.06×1.4 ; (4) 2.24×1.3 ; (5) 2×1.46 ; (6) 1.98×1.4 (Nepean Island, 12/xi./08).

135(M). 19. MICRANOUS LEUCOCAPILLUS Gould.

White-capped Noddy; Titerack (N.I.).

Anous melanogenys, Crowfoot, p. 264; Ramsay, p. 38; North, 'Nests and Eggs,' p. 376.

Micranous leucocapillus, Cat. Birds Eggs, B.M., i. p. 199, 1901; Campbell, p. 856.

Hab.—Norfolk Island (breeding), Lord Howe Island (accidental). (N. and E. Australia, Pacific and Indian Oceans, S. Africa, E. America, Caribbean Sea).

The White-capped Noddy breeds on Norfolk and Phillip Islands. Although a number of the birds visited Lord Howe Island early in February, 1909, they only remained there a fortnight; and I am informed that this is the only recorded instance of their occurrence at that Island. I have seen a photograph of these visitors, from which their identity is established.

I visited Phillip Island on 3rd November, 1908; and, after a stiff climb up the steep and crumbling slopes leading to the higher levels of the island, discovered that large colonies of the "Titeracks" were sitting on their recently laid eggs. From a dozen to a hundred or more birds take possession of one of the large White Oak (*Lagunaria Patersoni*) trees, and adorn every convenient fork or other suitable place, not despising a broad horizontal branch with a few upright shoots, with their compact little nests of brightly coloured seaweeds brought fresh and damp from the rocks, and pressed into cushion-shape, with a slight depression in the centre. The birds display considerable taste in the selection of strikingly contrasted colours, red, green, and purple seaweeds being matted together with strands of the broad "Moöo" grass.

In some of the deep watercourses the oak-trees were dwarfed, and threw out horizontal branches of great length. From these again sprang short straight shoots, generally in clusters of four or six. These bunches of shoots made admirable supports for the matted nests, and it was possible to reach some of the lower branches from the ground. Having collected the eggs from these, one could ascend and walk along them in order to collect from the next tier of branches. My friend, Mr. Lindsay Buffett, who accompanied me on this expedition, said that my excursions along these branches gathering eggs reminded him of a delighted schoolboy picking apples in an orchard!

The colonies do not commence to breed on the same day, as we found nests in course of construction, fresh eggs, and others well advanced in incubation on the same tree.* The birds were not shy, but generally left the nests when we were within reach, and sidling along the branch, uttered the querulous cry which has earned them their local appellation.

The rapid destruction of the timber on this island, resulting from the herbage being eaten out by the rabbits, is evidenced by the number of fallen oaks, gradually becoming bleached or decaying skeletons. On some of these former homes of the Titeracks a few birds still breed among the dead twigs, and even on the upturned roots. There are also several trees, both White Oaks and Pine trees, on Norfolk Island where the White-capped Noddy breeds. I visited two localities in the vicinity of Steel's Point and Duncombe Bay, but although the birds were roosting there, they had not commenced to build by the middle of November, 1908.

A single egg is laid, of a white, creamy, or warm pinkish ground, more or less spotted or blotched with deep reddish and chocolate-brown, and with purple suffused markings. In some cases the markings are scattered over the whole shell, in others forming a cap at the larger end, and in others again a more or

* In the season of 1909, fresh and incubated eggs were taken on 15th December.

less distinct zone. A few eggs are white, almost entirely devoid of markings. The shape is from elongated to stout oval, and the size varies considerably. Dimensions: (1) 1.8×1.3 ; (2) 1.86×1.25 ; (3) 1.85×1.20 ; (4) 1.74×1.26 ; (5) 1.72×1.23 ; (6) 1.64×1.20 .

136(M).

20.GYGIS ALBA Sparrm.

White Tern; White Bird(N.I.).

Gygis candida Gmelin, Gould, p.405; Crowfoot, p.266; Ramsay, p.38; North, 'Nests and Eggs,' p.374.

Gygis alba, Cat. Birds Eggs, B.M., i. p.200, 1901; Campbell, p.857.

Hab.—Norfolk Island. (N. and E. Australia, Pacific, Indian and S. Atlantic Oceans).

My principal object in visiting Norfolk Island was to see this beautiful bird, and study its remarkable breeding habits. On my arrival at the island (8th October, 1908) I was informed that the "White Birds" had not yet commenced to lay, although a few had been seen at their usual breeding haunts. On the 14th, I visited the Pacific Cable Station at Anson Bay, on the western coast, and there saw several birds flying about the great White Oak trees(*Lagunaria Patersoni*), but none appeared to be sitting. I visited Steel's Point, on the eastern coast, on the 17th of October, and there had the satisfaction of handling my first specimens of the beautiful eggs of *Gygis alba*. Many subsequent days were spent in visiting the two breeding localities, one extending along the eastern coast from Ball Bay to Steel's Point, and the other on the western coast from Selwyn Bridge, past Anson Bay to Duncombe Bay on the north. On these occasions I watched the birds, from the laying of the egg to the hatching and rearing of the young ones, and will now give a general description embracing the result of my observations extending over one month.

The White Tern breeds in the densely wooded gullies, not in colonies in the strict sense of the term, but widely scattered over the two localities mentioned. The single egg is deposited in a knot-hole or any slight depression on a more or less horizontal

limb of one of the forest trees, preference being given to that great Hibiscus, the White Oak (*Lagunaria Patersoni*). This tree is given to sending out shoots, which die and leave a small hole around which the bark thickens into a ridge an inch or more in height, thus forming an admirable resting-place for the Tern's egg. The broad flattish upper surface of the limbs of the other trees, frequently overgrown with lichens or masses of Spanish moss with pendent streamers, also offer reasonably secure accommodation for the eggs, while less frequently the moss-grown lower branches of the Norfolk Island Pine-tree (*Araucaria excelsa*) are utilised. No material to form a support of any kind for the egg is added to the spot selected for its resting-place.*

In only three instances did I find an egg at a height of less than twenty feet from the ground, the general height being from thirty to sixty feet. As a rule one pair of birds only inhabits a tree, but from one large oak near the Cable Station two eggs were taken on the same day, and three other birds were sitting close as if on eggs, but in quite inaccessible positions on thin dead branches. The Tern generally selects trees sheltered from the direct force of the prevailing winds from the sea, and the

* Snodgrass and Heller, in their paper on the Birds of Clipperton and Cocos Islands (Proc. Wash. Acad. Sc., iv., p.511, 1902), referring to this bird, state:—"Abundant in July at Cocos Island, where it was nesting in the tops of tall trees a short distance inland, in company with *Micranous diamesus*. We did not secure any eggs. The nests, built of twigs, somewhat resemble those of a crow. Many nests were frequently found in one tree. The birds were difficult to obtain from the water, for in flying back and forth from their nests they nearly always remained at the same elevation as the nests."

I am of opinion that the authors were in error in attributing the nests "built of twigs" to the White Tern; they no doubt belonged to the Micranous. It does not appear possible that the same species would exhibit such different habits in two localities where the conditions were practically identical as regards site, vegetation, and facilities for procuring material for constructing nests were such required.

sitting bird puffs out its breast-feathers so as to completely hide the egg, depressing its forked tail so as to obtain as secure a hold as possible, and sits with its beak pointing into the eye of the wind, so as to offer the least resistance. Its position may thus be either facing along the limb, or across it diagonally, or at right angles. It sits close until the intending robber is almost within reach, when it raises its wings and, gently fluttering them, "tiptoes" sideways off the egg and hovers about uttering a guttural "heech, heech." Both parents share in the task of incubation, and when changing guard the male bird circles round, uttering his cry, and as he settles on the limb balancing himself with raised wings, the hen sidles off, and he with equal caution takes her place. Although in a few instances I found birds inhabiting adjoining trees, they were generally widely scattered, and frequently a quarter of a mile was covered between nests. Owing to the dense growth and the height at which the birds laid their eggs, the most successful plan for locating them was to ascend to the top of a ridge and scan the trees growing on the opposite side of the gully. On a sunny day the gleaming white plumage of the bird was conspicuous against the dark green of the leaves or the grey of the branches. After noting the position of the tree, a plunge through the thick undergrowth to the bottom and a toilsome scramble up the other side led to a search for the inhabited tree, which often proved far more formidable to climb than it appeared from a distance. The island boy who accompanied me was an excellent climber, and so long as he could get a clasp round two-thirds of the circumference, or the bark was sufficiently rough, he would swarm up with the soles of his bare feet clasping the trunk, and when the first branch was reached the rest was easy. Where, owing to the ridges being timbered as densely as the valleys, a sight of the opposite side could not be obtained, a careful search for the white splashes on the leaves of the undergrowth generally located a bird, and a prospecting tour up the tree was rewarded in many cases.

In one instance I found a bird sitting on an egg deposited on the splintered top of a dead bloodwood, about 15 feet from the

ground, in the most precarious position of all I saw. The stump was so rotten that it swayed and creaked as my climber wormed his way upward, and when the bird flew off, the egg stood revealed balanced on such an attenuated point that its entire outline could be distinctly seen against the background. The surrounding vegetation was so dense that no breath of wind could reach it, but had it been fated to hatch out, one wonders how the young bird would have fared on such a slender support!

One egg, just chipping when found, was left to hatch out on 24th October. On the 31st I saw the young bird, a ball of black down, squatting unconcernedly on the bare limb while its parents were away searching for food. A week later it was still there, and had then grown nearly as large as its mother, but was still covered with the black down. Its mother flew up, and straddled over it, vainly endeavouring to cover it. There it sat blinking down at us, like a black picaninny in the arms of a white nurse!

The eggs vary in size very slightly, in comparison with those of other Terns, and in colour-markings they vary to a less striking degree, maintaining the same general characteristics, but no two individual eggs are exactly alike. Elliptical in shape, they differ somewhat in length, but I have not seen any specimens approaching an ovate shape, or any abnormally small specimens.

The first egg was taken by me on the 17th October, but the birds generally commence to lay a little earlier, and if robbed, they lay again, but not until some weeks have elapsed. The last egg taken for me during the 1908-9 season was procured on the 28th February, 1909.

Dimensions of six selected specimens showing the greatest variation :—

- (1) 1.9×1.28 (31st October, 1908).
- (2) 1.8×1.34 (15th December, 1908).
- (3) 1.8×1.2 (10th December, 1908).
- (4) 1.67×1.3 (15th December, 1908).
- (5) 1.66×1.22 (31st October, 1908).
- (6) 1.58×1.3 (31st October, 1908).

CHARADRIFORMES.

143(M). 21. ARENARIA INTERPRES Linnæus.

Turnstone.

Streptilas interpres, Ramsay, p.38.*Hab.*—Lord Howe and Norfolk Islands (visitor only). (Australia generally, N. Asia, N. America).

A Turnstone was shot at Lord Howe Island by Mr. L. Waterhouse in October, 1903, and the skin is now in the possession of Mr. John Waterhouse, of Chatswood.

151(M). 22. CHARADRIUS DOMINICUS Müller.

Lesser Golden Plover; Snipe (L.H.I., and N.I.).

Charadrius xanthocheilus Gould; Ramsay, p.38.*Hab.*—Lord Howe and Norfolk Islands (visitor only). (Australia generally, Tasmania, Sub-Arctic regions of both hemispheres).

This Plover visits both groups in large flocks during the months from September to December. It feeds along the beaches and over the cultivated and grassed paddocks, generally accompanied by a few Whimbrels.

152(M). 23. OCHODROMUS BICINCTUS Jardine & Selby.

Double-banded Dottrel.

Egialitis bicinctus, Ramsay, p.38.*Hab.*—Lord Howe and Norfolk Islands (visitor only). (Australia generally, Tasmania, New Zealand, *breeding*).

This Dottrel is rarely seen at either group, and is not distinguished by any local name. I saw a pair feeding on the northern end of the coral reef at Lord Howe Island in October, 1907, and another pair flying restlessly about Back Beach on the eastern side of the island during the same month.

161(M). 24. HIMANTOPUS LEUCOCEPHALUS Gould.

White-headed Stilt.

Himantopus leucocephalus, North, Rec. Aust. Mus. ii., p.36, 1892.*Hab.*—Lord Howe and Norfolk Islands (visitor only). (Australia generally, Tasmania, New Guinea, Molucca Is., Greater Sunda Is.).

A skin of this species was forwarded to the Australian Museum by Dr. P. H. Metcalfe, who obtained it at Norfolk Island in April or May, 1892. A similar one was obtained the previous year by Mr. T. R. Icely, visiting magistrate at Lord Howe Island (North).

165(M). 25. NUMENIUS VARIEGATUS Scop.

Whimbrel; Curlew(L.H.I.); Shipmate(N.I.)

Numenius uropygialis, Gould; Ramsay, p.38.

Hab.—Lord Howe and Norfolk Islands (visitor only). (Australia generally, Tasmania, E. Siberia, Japan).

The local name given to this bird by the Norfolk Islanders is derived from its habit of associating in twos or threes with the large flocks of the Lesser Golden Plover, locally known as "Snipe." The Whimbrel usually keep with the Plover, but on the outskirts of the main flock, and they are generally the first to fall to the pothunter's gun. At Lord Howe Island I have counted as many as thirty Whimbrel in a paddock attached to Mrs. Nichol's residence, where they fed unconcernedly, hardly taking any notice of me as I passed within easy gunshot.

167(M). 26. LIMOSA NOVÆ-ZEALANDIÆ Gray.

Barred-rumped Godwit.

Limosa uropygialis, Gould; Ramsay, p.38.

Hab.—Lord Howe Island(visitor only). (Australia generally, Tasmania, New Zealand, Oceania, Alaska, E Siberia).

I did not see this bird on either group of islands, but two specimens were shot at Lord Howe Island by Mr. L. Waterhouse in October, 1903.

181(M). 27. HETEROPYGIA AURITA Latham.

Marsh Tringa.

Hab.—Lord Howe Island(visitor only). (Australia generally, Tasmania, New Zealand, E. Siberia, China, Alaska).

Three specimens of this bird were shot at Lord Howe Island by Mr. L. Waterhouse in October, 1903.

185(M). 28. GALLINAGO AUSTRALIS Latham.

Snipe.

Gallinago australis, North, Rec. Aust. Mus. v. p.337(1904).*Hab.*—Lord Howe Island(visitor only). (Australia, Tasmania, New Zealand, Formosa, Japan).

A specimen was obtained by Mr. Waterhouse at Lord Howe Island in the spring of 1903(North).

ARDEIFORMES.

197(M). 29. PLATALEA REGIA Gould.

Black-billed (Royal) Spoonbill.

Platalea melanorhyncha, Reich.; North, Rec. Aust. Mus. ii. p.36(1892).*Hab.*—Norfolk Island(visitor only). (Australia generally, New Zealand, *accid.*, Molucca Is., S. Borneo).

A skin of this species was forwarded to the Australian Museum by Dr. P. H. Metcalfe, who obtained it at Norfolk Island in April or May, 1892.

203(M). 30. HERODIAS TIMORIENSIS Lesson.

White Egret.

Herodias egretta Gmelin; North, Rec. Aust. Mus. ii. p.36(1892).*Hab.*—Lord Howe and Norfolk Islands(visitor only). (Australia generally, New Zealand, Philippine Is., China, Japan).

A skin of this species was forwarded to the Australian Museum by Dr. P. H. Metcalfe, who obtained it at Norfolk Island in April or May, 1892.

204(M). 31. NOTOPHOYX NOVÆ-HOLLANDIÆ Latham.

White-fronted Heron; Crane(L.H.I. and N.I.).

Ardea novæ-hollandiæ, Ramsay, p.38.*Hab.*—Lord Howe and Norfolk Islands(visitor only). (Australia generally, Tasmania, New Zealand, New Caledonia, New Guinea, Celebes, Molucca Is.).

This Heron appears to be a by no means infrequent visitor at both groups, although it has not been known to breed on either. At Lord Howe Island I saw five White-fronted Herons on the south end of the coral reef in October, 1907.

210(M). 32. NYCTICORAX CALEDONICUS Gmelin.

Night Heron.

Nycticorax caledonicus, Ramsay, p.38.

Hab.—Lord Howe Island (visitor only). (Australia generally, Tasmania, New Zealand, New Guinea, Admiralty Is., Pelew Is., Celebes).

212(M). 33. ARDETTA PUSILLA Vieillot.

Little Bittern.

Ardetta minuta, Linn.; Ramsay, p.38.

Hab.—Lord Howe Island (visitor only). (Australia generally, New Zealand).

This is given on Ramsay's authority, but its occurrence is doubtful.

ANSERIFORMES.

226(M). 34. ANAS SUPERCILIOSA Gmelin.

Black Duck; Duck (L.H.I., and N.I.).

Anas superciliosa, Ramsay, p.38.

Hab.—Lord Howe Island (visitor only), Norfolk Island. (Australia generally, Tasmania, New Zealand, New Guinea, Sunda Is).

The Black Duck is an occasional visitor to both Islands, but on one occasion, Dr. P. H. Metcalfe informed me, a pair bred on Norfolk Island, a nest containing five eggs being found by him.

PELICANIFORMES.

238(M). 35. PHALACROCORAX SULCIROSTRIS Brandt.

Little Black Cormorant; Shag (L.H.I., and N.I.)

Graculus sulcirostris, North, Rec. Aust. Mus. ii, p.36(1892).

Hab.—Lord Howe Island and Norfolk Island (visitor only). (Australia generally, Tasmania, New Zealand, New Guinea, Molucca Is. to S. Borneo).

A skin of this species was sent to the Australian Museum by Dr. P. H. Metcalfe. It was obtained, with other occasional

visitors to Norfolk Island in April and May 1892. I did not see this bird during my visit to the Island, but was informed by Mrs. Laing that several had been seen there at various times.

241(M). 36. *PHALACROCORAX MELANOLEUCUS* Vieillot.

Little Cormorant.

Graculus melanoleucus, Ramsay, p.38.

Hab.—Lord Howe Island(visitor only.) (Australia generally, Tasmania, New Zealand, New Guinea, Molucca Is., Sunda Is.).

244(M). 37. *SULA CYANOPS* Sundevall.

Masked Gannet; Booby and Fish-bird(L.H.I.); Gahnet(N.I.).

Sula personata, Gould; Crowfoot, p.269.

Sula cyanops, Ramsay, Proc. Linn. Soc. N.S.Wales, ii.(2nd ser.) p.678, 1887; Ramsay, p.38; North, 'Nests and Eggs,' p.379; North, 'Lord Howe Island,' p.48.

Hab.—Lord Howe and Norfolk Islands. (N. Australia, S. Tropical Oceans).

The Masked Gannet breeds in fairly large numbers on the Admiralty Islets off Lord Howe Island, and on Nepean and Phillip Islands, and the smaller rocky islets off Norfolk Island. The season extends from early in September until January, but in the majority of cases October is the month for laying. Except in a few isolated instances, the nests contained two eggs during the seasons of 1907 and 1908, but this bird appears to make family arrangements in accordance with the food-supply. On the Admiralty Islet, which I visited in 1907, of the nests examined one contained three fresh eggs, twenty contained two in varying stages, and one contained one fresh egg which was probably an uncompleted sitting, as it was quite clean. I found no nests containing young birds on this occasion(16th October). In 1908, I found two nests on Nepean Island, each containing a fresh egg, one containing two eggs half incubated, and one containing two eggs just chipping(15th October). On the 3rd November, 1908, I visited Phillip Island and examined about twenty

nests, taking eleven clutches of eggs. The following table showing their condition is interesting.

No. of Clutch.	No. of Eggs.	Condition.
1	2	{ 1. Fresh, but slight tinge of blood in yolk. 2. Slightly incubated, considerable blood in yolk, and albumen thickening.
2	2	Both addled, contents thin, watery and offensive. (The bird was sitting).
3	2	Both nearly hatched.
4	2	{ 1. One-fourth incubated, legs formed. 2. Slightly incubated, legs not formed.
5	2	{ 1. About one-third incubated. 2. Slightly incubated, but embryo dead.
6	2	Both about half incubated; legs and wings formed.
7	2	About one-fourth incubated.
8	2	{ 1. Nearly hatched. 2. Slightly incubated; embryo dead.
9	2	{ 1. Addled, thin, watery. 2. Addled, thin, watery, very offensive. (No.2 was lying outside the nest).
10	2	{ 1. About half incubated. 2. Rather more advanced than 1.
11	1	Addled, thin, watery.

The other nests contained young birds in varying stages, from just hatched, "naked and unashamed," to the beautiful mass of snowy white down of a bird three weeks old. In two cases there were two living birds, just hatched, in the nest; and in one case there was one living bird, just hatched, in the nest, and a dead one was lying on a heap of twigs near the nest. In all the other cases there was only one young bird.

The conclusion I have ventured to draw from these facts is, that, in this particular season and locality, the Gannets deliberately limited their family to one, either by neglecting one of the eggs, and allowing it to get cold, or pushing it out of the

nest; or, where both eggs hatched out, by ejecting one of the young birds and allowing it to die from cold and starvation.*

The parent-birds appeared to have no immediate lack of food, as in each case upon my approach the sitting bird vomited up a "wad" of comparatively fresh fish of the mackerel genus, packed together with the heads all in one direction, and covered with greyish slime. One of these wads, which I inspected closely, consisted of six fresh fish about six inches in length.

Mr. Tom Iredale informs me that on the Kermadec Islands this Gannet lays from one to *five* eggs.

The nest is generally placed in an elevated position commanding a good outlook, but a few were close to the shore on a sloping ridge, placed amongst tussocks of Moöo grass. Where the soil was soft, a slight depression was made, and a few straws or rushes laid therein. On the harder ground a slight ridge of pebbles or small lumps of clay was raked up round the eggs.

When first laid the eggs are covered with a soft white chalky substance, which can easily be removed by scraping, disclosing a shell of a delicate pale bluish tint. The soft coating rapidly absorbs colour from the soil upon which it is laid, and, owing to its being frequently turned by the sitting bird, this added colour is most intense round the thickest part of the egg. Specimens taken from the clayey soil of the Admiralty Islets are from dirty white to blackish-brown, while some of those taken from the brilliant red soil of Phillip Island range from ochraceous to deep orange-red.

* In their article on the Birds of Clipperton and Cocos Islands (vide p.662) Snodgrass and Heller give the following note:—"On Clipperton this bird [*S. cyanops*] was found breeding in immense numbers in November," [the Island was visited on 23rd and 24th November, 1898]. The nests consisted of slight depressions scraped in the coral sand and contained one or two eggs each. The nesting had just begun, for no incubated eggs or young birds were seen: A set generally consisted of two eggs, but we were assured by people living on the island that only one young bird of each pair is reared, the other being left by its parents to starve on account of the extreme voracity of the young."(*op. cit.* p.512).

In dimensions the eggs vary to a great extent, and the eggs of a clutch are seldom of the same size.

Dimensions of five selected clutches:—

(1)*a*, 2.45×1.8 ; *b*, 2.6×1.85 ; *c*, 2.6×1.74 (Admiralty Islet, 16th Oct., 1907).

(2)*a*, 2.75×1.95 ; *b*, 2.85×1.8 (Admiralty Islet, 16th Oct., 1907).

(3)*a*, 2.5×1.84 ; *b*, 2.55×1.8 (Phillip Island, 3rd Nov., 1908).

(4)*a*, 2.8×1.9 ; *b*, 2.6×1.8 (Phillip Island, 3rd Nov., 1908).

(5)*a*, 2.6×1.8 ; *b*, 2.2×1.74 (Phillip Island, 3rd Nov., 1908).

(Specimen *b*, of clutch 5, was lying outside the nest, addled).

248(M).

38. FREGATA ARIEL Gould.

Lesser Frigate Bird.

Attagen ariel, Etheridge, 'Lord Howe Island,' p.16.

Hab.—Lord Howe Island (visitor only). (Australian Seas, Tropical and Sub-Tropical Oceans).

250(M).

39. PHAETHON ERUBESCENS Rothsch.

Roseate Red-tailed Tropic Bird; Bosun Bird (L.H.I.); Tropic Bird (N.I.).

Phaeton rubricauda, Bodd.; Crowfoot, p.268; Ramsay, p.38; North, 'Nests and Eggs,' p. 378; North, 'Lord Howe Island,' p. 47; Etheridge, 'Lord Howe Island,' p.16.

Hab.—Lord Howe and Norfolk Islands. (Laysan Island, Kermadec Islands).

This variety of the Tropic Bird is distinguished by a rosy tinge, which fades from the feathers unless kept from the light. It breeds in considerable numbers on the almost inaccessible cliffs of both groups. On the occasion of my visit to Phillip Island (3rd November, 1908), the birds were commencing to select their nesting places. From the top of the Peak I looked down a sheer cliff, 900 feet to the ocean, and saw these magnificent birds in hundreds sailing and wheeling about in their stately manner, with the scarlet tail-feathers streaming behind their glossy white bodies, while they filled the air with their cry of "Honk, Honk,"

resembling that of the Solan Goose. A few birds were sitting in the crevices in pairs.

Mr. Lindsay Buffett informed me that on Phillip Island this bird lays one egg only on a ledge, in a crevice, or on the sand under an overhanging boulder, from the base to the top of the cliff. It is possible to reach some of the eggs by standing up in a boat brought in to the base of the cliff in very calm weather.

Very few birds breed on Nepean Island and the smaller rocky islets.

On Lord Howe Island it breeds on the cliffs of the main island.

The breeding season at both groups extends from the end of November to the end of January. I have specimens of eggs taken at Lord Howe Island during December and January, 1908-9. They are very handsome, and variable in colour-markings. The ground-colour is white, but most examples are so heavily marked with purplish-pink specks and spots, with overlying purplish-brown blotches that the ground-colour is entirely obscured. Very occasionally, white specimens are obtained. North mentions two of the latter as being obtained at Lord Howe Island.

Dimensions :—(1) 2.7×1.98 (15th December, 1907); (2) 2.7×1.9 (14th December, 1908); (3) 2.6×1.85 (18th January, 1909); (4) 2.55×1.8 (31st January, 1909).

251(M).

40. PHAETHON LEPTURUS Daudin.

White-tailed Tropic Bird.

Phaeton candidus, North, Rec. Aust. Mus. iii., No. 4, p. 89 (1898).

Hab.—Lord Howe Island (visitor). (Australian Seas, Tropical Oceans, Atlantic and Pacific Oceans).

One specimen in an advanced stage of immaturity was obtained from Lord Howe Island in May, 1890, by Mr. D. Love (North).

ACCIPITRIFORMES.

253(M).

41. CIRCUS GOULDI Bonaparte.

Gould's Harrier; Hawk (L.H.I., and N.I.)

Circus gouldi, Ramsay, p. 37; *C. wolfii*, Etheridge, 'Lord Howe Island,' p. 8.

Hab.—Lord Howe and Norfolk Islands (visitor only). (Australia generally, Tasmania, New Zealand, New Caledonia, Fiji Is.).

256(M). 42. *ASTUR NOVÆ-HOLLANDIÆ* Gmelin.

White Goshawk.

Hab.—Lord Howe Island (visitor only). (Queensland, New South Wales, Victoria, Tasmania, S. Australia).

Mr. Herbert Wilson, of Lord Howe Island, described to me a bird which was evidently the White Goshawk. It visited the island on one occasion only, remaining there for some time.

265(M). 43. *HALIAËTUS LEUCOGASTER* Gmelin.

White-bellied Sea-Eagle.

Haliaëtus leucogaster, Ramsay, p.37.

Hab.—Lord Howe Island (visitor only). (Australia generally, Tasmania, Malay Archipelago to India and Ceylon).

267(M). 44. *HALIASTUR SPHENURUS* Vieillot.

Whistling Eagle.

Haliastur sphenurus, Ramsay, p.37.

Hab.—Lord Howe Island (visitor only). (Australia generally, New Caledonia, New Guinea).

STRIGIFORMES.

284(M). 45. *NINOX ALBARIA* Ramsay.

Lord Howe Island Owl; Morepork(L.H.I.).

Ninox albaria, Ramsay, p.37(note).

Hab.—Lord Howe Island.

In his Tabular List, Ramsay places this species in the column devoted to the birds of Norfolk Island, but in the note describes it as from Lord Howe Island.

I frequently heard the cry of this bird at night, but did not see it. The cry resembles that of *Ninox boobook*.

283(M). 46. *Ninox boobook* Latham.

Boobook Owl.

Ninox boobook, Ramsay, p.37.

Hab.—Norfolk Island. (Australia generally, Tasmania).

Ramsay says: "The Norfolk Island bird is said to be *Ninox boobook*, but it is more likely to prove to be *Ninox novæ-zeelandiæ*, or perhaps the present species" [*N. albaria*].

I did not see or hear this bird at Norfolk Island, but was informed that it still exists in the gullies on Mount Pitt.

PSITTACIFORMES.

299(M). 47. *Nestor productus* Gould.

Phillip Island Parrot.

Nestor productus, Ramsay, p.38.

Hab.—Phillip Island(extinct).

300(M). 48. *Nestor norfolcensis* Pelzeln.

Norfolk Island Parrot.

Hab.—Norfolk Island(extinct).

334(M). 49. *Platycercus elegans* Gmelin.

Pennant's Parrakeet; Red Parrot(N.I.).

Platycercus pennanti, Ramsay, p.37; var. *Nobbsi* Tristram, Ibis, iii.(5th Ser.)p.48(1885).

Hab.—Norfolk Island. (S. Queensland, New South Wales, Victoria, S. Australia).

Pennant's Parrakeet is found in very large numbers at Norfolk Island, feeding in pairs or small flocks along the roadside, or in the cultivation-paddocks. It also evinces a partiality for the orchards when the fruit is ripening, and, generally speaking, is most destructive in field, orchard, or strawberry garden.

Being a mainland species, it is rather curious that this bird has not settled at Lord Howe Island also.

It lays from five to eight eggs in a spout or hollow of a dead tree. They are dull white, rounded in form. Dimensions: 1.08 x 0.88.(N.I., 10th Oct., 1908).

369(M). 50. CYANORHAMPHUS COOKI Gray.

Norfolk Island Parrakeet; Green Parrot(N.I.).

Cyanorhamphus cooki (non *rayneri*), North, Proc. Linn. Soc. N.S. Wales, viii, p.517.

Hab.—Norfolk Island.

This graceful Parrakeet is now becoming so scarce at Norfolk Island that the Chief Magistrate (Captain Elliott, R.N.) issued a notification protecting it from destruction unless caught, *in flagrante delicto*, damaging the fruit-crops. It is now almost entirely restricted to the gullies running up towards the top of Mount Pitt.

While at Norfolk Island I did not succeed in finding any nests, but at Palm Glen, the residence of Mr. Alfred Waterhouse, on a spur of Mount Pitt, I saw several birds, and was informed that they breed in hollows of dead trees, generally at a considerable height from the ground.

Eggs, clutch two, creamy white, surface dull. Two eggs taken on the 12th of October, 1902, presented to me by Dr. Metcalfe, differ remarkably in size, the dimensions being: (a). 1.11×0.9 ; (b) 0.88×0.78 .

I have also a single egg, taken at Mount Pitt, on the 28th of February, 1909, measuring 1.15×0.97 .

370(M). 51. CYANORHAMPHUS SUBFLAVESCENS Salvadori.

Lord Howe Island Parrakeet.

Platycercus sp., Etheridge, 'Lord Howe Island,' p.10.

Hab.—Lord Howe Island(extinct).

Mrs. Nichols informed me that, some years ago, this Parrakeet was very plentiful, but, being destructive in the fruit-gardens, it was gradually exterminated.

CORACIIFORMES.

381(M). 52. EURYSTOMUS PACIFICUS Latham.

Dollar-bird or Roller.

Eurystomus pacificus, Ramsay, p.37.

Hab.—Lord Howe and Norfolk Islands(visitor only). (Australia, except S. and W., New Zealand, Molucca Is., Celebes, Lesser Sunda Is.).

This bird is a very occasional visitor to both islands. I did not see one on my visits, but was informed by residents in both islands that it had been seen and shot occasionally. A specimen was shot at Lord Howe Island by Mr. L. Waterhouse, in 1903.

393(M).

53. HALCYON VAGANS Lesson.

Norfolk Island Kingfisher; Kingfisher(L.H.I.); Norfolker (Noffka: N.I.).

Hab.—Lord Howe and Norfolk Islands. (New Zealand).

This bird is found in large numbers on both islands. At Norfolk Island it breeds in holes tunnelled in the clayey or sandy banks. On the sides of the main road and quite close to the township, Kingston, many hundreds of holes may be seen, some partly excavated and abandoned on account of the hardness of the ground, some used and deserted, and others in actual use during the breeding season (September to December). In one bank, which consisted of a mixture of sand and clay and was, therefore, peculiarly suitable for boring, I counted no less than 40 holes in a space of 6 by 4 feet. Less frequently it breeds in the gigantic tree-ferns, or in decayed portions of the Norfolk Island Pine(*Araucaria excelsa*).

At Lord Howe Island this bird breeds only in the decayed portions or hollow spouts of the huge Banyan tree(*Ficus* sp.).

At the latter island the Kingfisher bears a bad reputation, it being asserted that it kills chickens out of pure mischief, and not for food. It is, therefore, generally shot when it approaches too close to the fowl-yard. At Norfolk Island it is regarded as quite harmless, and is even held in affectionate regard. Its local name was given to it by the Pitcairn Islanders when they settled on the island. There being no similar species at "Home"(Pitcairn), they called this bright stranger the "Norfolker," which is now shortened to "Noffka."

Eggs, clutch 4 to 6, pearly white, glossy, varying from roundish to slightly pointed ovals. Dimensions of a clutch of five—(a) 1.08×0.88 ; (b) 1.02×0.85 ; (c) 1.08×0.85 ; (d) 1.08×0.84 ; (e) 1.02×0.86 . (Norfolk Island, 7th November, 1908).

COC CYGES.

405(M). 54. CUCULUS INORNATUS Vigors & Horsfield.

Pallid Cuckoo.

Cacomantis pallidus Latham; Ramsay, p.37.

Hab.—Lord Howe Island (visitor only). (Australia generally, Tasmania).

406(M). 55. CACOMANTIS RUFULUS Vieillot.

Fan-tailed Cuckoo.

Cacomantis flabelliformis Latham; Ramsay, p.37.

Hab.—Lord Howe Island (visitor only). (Australia generally, Tasmania, Aru Is.).

411(M). 56. CHALCOCOCCYX LUCIDUS Gmelin.

Broad-billed Bronze Cuckoo; Greenback(N.I.).

Chalcites plagosus Latham; Ramsay, p.37.

Hab.—Lord Howe Island, Norfolk Island. (E. Australia, Tasmania, New Zealand, Chatham Is., Macquarie Is.).

This Cuckoo is by no means common on either island, and, so far as I could ascertain, it has no local name at Lord Howe Island. I have not heard of its breeding at the latter island, but an egg was taken by Dr. Metcalfe in the nest of *Pseudogerygone modesta* at Norfolk Island. I saw one bird only there, but a correspondent, writing under date 8th August, 1909, stated that several flocks of "greenbacks" had just arrived.

415a(M). 57. EUDYNAMIS TAITENSIS Sparrm.

Long-tailed Cuckoo; Sparrow Hawk, or Home Owl(N.I.).

Eudynamys taitensis, Ramsay, p.37.

Hab.—Lord Howe (accidental), and Norfolk Island. (New Zealand, Ellice Is., Tahiti).

The Long-tailed Cuckoo is very common at Norfolk Island during the spring and summer months, and its shrill cry is frequently heard about dusk. The local residents regard it as a bird of prey, hence its name of "Sparrow Hawk," on account of

its habit of stealing both eggs and young of the small native birds. The name "Home Owl," given it by some of the Pitcairners, refers to its habitat extending to their old home, Pitcairn Island. The term "Owl" no doubt refers to its semi-nocturnal habit.

Although there is no recorded instance of an egg of this Cuckoo being found at Norfolk Island, and Dr. Metcalfe considers that it does not lay there, I anticipate that it will yet be found to place its egg in the nest of the local *Pseudogerygone*.

Dr. Robert Fulton, of Dunedin, N.Z., has dealt very fully with the habits of this Cuckoo,* and has ably summarised the evidence as to its foster parents in New Zealand, and the descriptions of its egg. The latter is said to be variable in coloration and markings, being white when laid in domed or covered-in nests, and marked somewhat in imitation of the eggs of its more or less unwilling hosts. So far as can be gathered from the available data, the question of a satisfactory description of the egg has not been settled. The dimensions are given as varying from 0.75 to 1.25 inch in length, and the shape from almost spherical to ovoido-elliptical.

A specimen of this bird was shot at Lord Howe Island in 1905, and the skin is now in the possession of Mr. John Waterhouse, of Chatswood.

PASSERIFORMES.

429(M).

58. *HIRUNDO NEOXENA* Gould.

House Swallow.

Hab.—Lord Howe Island (accidental). (Australia generally, Tasmania).

A single bird arrived at Lord Howe Island on the same day as myself. It remained there during my stay on the Island, perching on the porch of Mrs. Nichols' residence, from whence it pursued insects with vigour. Mrs. Nichols informed me that it did not remain long after I left.

* Trans. N. Z. Inst. xxxvi. p.113, 1903(1904); Report Aust. Assoc. Adv. Sci., 1904, x., 513.

441(M). 59 PETRÆCA MULTICOLOR Gmelin.

Norfolk Island Robin; Robin(N.I.).

Petræca erythrogastra Gould, p.526; *Petræca multicolor*, Ramsay, p.37; North, 'Nest and Eggs,' p.410.

Hab.—Norfolk Island.

This species, peculiar to Norfolk Island, is common in the timber near cultivation, the bright colour of the male being very conspicuous as he perches on the stumps or low branches of the shrubs. The nest is similar to that of *P. leggii*, but somewhat larger, deeper, and more warmly lined with fine cowhair, thistle-down, or other soft material. Outwardly it is constructed of mosses, ornamented with bright green lichens. It is generally placed in an upright fork at any convenient point, from a few feet from the ground to the topmost twigs of a tree fifty feet in height. Two nests taken for me were in very high whitewood trees, and another was placed on the horizontal branch of a Norfolk Island pine. The breeding season commences in September, and extends over the two following months. Eggs, clutch two generally, occasionally three(North, three or four). Oval in form, greyish or greenish ground, freckled, spotted or blotched with warm brown over the whole shell, but more thickly at the larger end, where the markings occasionally become confluent and form a cap or zone.

Dimensions :

- (1) *a*, 0.74×0.59 ; *b*, 0.75×0.58 ; *c*, 0.77×0.58 (21st Oct., 1908).
 (2) *a*, 0.75×0.60 ; *b*, 0.74×0.59 (22nd Oct., 1908).
 (3) *a*, 0.84×0.61 ; *b*, 0.77×0.61 (11th Nov., 1908).

453(M). 60. GERYGONE THORPEI Ramsay.

Rain-bird, or Pop-goes-the-Weasel(L.H.I.).

Gerygone thorpei Ramsay, Proc. Linn. Soc. N. S. Wales, ii.(2nd Ser.), p.677(1887); Etheridge, 'Lord Howe Island,' p.9.

Hab.—Lord Howe Island.

The residents do not distinguish this species from *Pseudogerygone insularis*, but it is a smaller bird, and may be easily recognised by its yellow breast.

I did not succeed in finding a nest of this bird.

454(M). 61.PSEUDOGERYGONE MODESTA Pelzeln.

Ashy-fronted Gerygone; Humming Bird(N.I.).

Gerygone modesta, Ramsay, p.37; North, 'Nests and Eggs,' p.410.

Hab.—Norfolk Island.

The Norfolk Island Gerygone is a busy little insect-hunter, all day long merrily trilling his chromatic scales in the more open timbered country, and in the gardens of the residents. The nest is similar in shape to that of *G. albigularis* of the mainland, constructed of bark, grass, cowhair, wool, or any other soft material handy; domed, and with a short protecting hood above the entrance, lined with feathers, and suspended to a wild tobacco twig, or amongst the dense leaves of the bloodwood. One nest I examined was constructed almost entirely of wool gathered from the barbed-wire fences, bound together with long grasses and horsehair. The lining contained only two or three feathers. The regular breeding season extends from September to December, but a nest containing three fresh eggs was taken on the 20th February, 1909.

Eggs, clutch two to three (North, two to four), elongated oval, varying from white to pale pinkish, finely spotted with dark red or streaked, spotted, or blotched with pale red, generally well distributed over the whole shell, but occasionally forming a cap or zone at the larger end.

Dimensions :

(1) *a*, 0.63×0.50 ; *b*, 0.67×0.51 ; *c*, 0.64×0.50 (9th Nov. 1908).

(2) *a*, 0.73×0.50 ; *b*, 0.72×0.52 ; *c*, 0.73×0.52 (29th Nov. 1908).

(3) *a*, 0.68×0.50 ; *b*, 0.67×0.50 (12th Nov., 1908).

458(M). 62.PSEUDOGERYGONE INSULARIS Ramsay.

Rain-bird, or Pop-goes-the-Weasel(L.H.I.).

Gerygone insularis Ramsay, Proc. Linn. Soc. N. S. Wales, iii., p.117(1878); Etheridge, 'Lord Howe Island,' p.9.

Hab.—Lord Howe Island.

The sweetly mournful note of this bird somewhat resembles that of *Gerygone albigularis*, in that it is chromatic, but it is more staccato and varied in its tones. By some of the Islanders it is called "Pop-goes-the-Weasel," it being considered that its song resembles that ancient air. The birds are fairly numerous, flying briskly about the tree-tops; and are especially active in the pursuit of small insects after a shower of rain.

I did not succeed in finding a nest of this bird, but it was described to me by the islanders as being a dome-shaped structure, with entrance at the side, having a projecting hood.

481(M).

63. RHIPIDURA PELZELNI Gray.

Pelzeln's Fantail; Fantail(N.I.)

Rhipidura pelzelni, Ramsay, p.37; North, 'Nests and Eggs,' p.409.

Hab.—Norfolk Island.

This confiding little Fantail is closely allied to the Lord Howe Island species, and its nest is similarly constructed with either a very rudimentary "tail," or with none at all. It is placed in the fork of a wild tobacco plant, often quite close to the ground, or on a horizontal twig of a "currajong" tree, or amongst the thick leaves of one of the lower branches of a bloodwood tree. It is constructed of tufts of short cowhair, mosses, &c., woven together, and outwardly covered with cobweb ornamented with splinters of decayed pine, lined with long tail-hairs of horse or cow.

The bird is very familiar, and will hover round one's head, or pick a fly from the face or hand of a recumbent person.

Eggs, clutch two to three (North, on the authority of Dr. Metcalfe, three or four), short oval in form, white, glossy, with pale yellow-brown markings, and suffused bluish-grey blotches and spots, scattered over the whole shell, or forming a cap or zone at the larger end.

Dimensions :

- (1) $a, 0.65 \times 0.50$; $b, 0.64 \times 0.50$; $c, 0.62 \times 0.50$ (16th November, 1908).
- (2) $a, 0.62 \times 0.50$; $b, 0.62 \times 0.47$; $c, 0.60 \times 0.50$ (21st October, 1908).
- (3) $a, 0.63 \times 0.50$; $b, 0.64 \times 0.50$; $c, 0.63 \times 0.50$ (1st November, 1908).

482(M). 64. RHIPIDURA MACGILLIVRAYI Sharpe.

Fawn-breasted Fantail; Fantail(L.H.I.).

Rhipidura macgillivrayi Sharpe, Proc. Zool. Soc. 1881, p.789;
Rhipidura cervina Ramsay, Proc. Linn. Soc. N. S. Wales, iii.
p.340(1878); Etheridge, 'Lord Howe Island,' p.9.

Hab.—Lord Howe Island.

On my arrival at Lord Howe Island, 3rd October, 1907, Mr. J. B. Waterhouse informed me that he had found a Fantail's nest near his house. On the following day I visited the spot, and was shown a nest which the birds had built a few weeks previously, but abandoned on completion. It was placed on a horizontal twig of a small tree, about fifteen feet from the ground. A fresh nesting-place had been chosen in a small prickly shrub, overgrown with clematis, the nest being almost hidden amongst the vine-leaves, securely fastened in the fork of a small branch of the shrub. The female was sitting, and reluctantly slipped off at our approach. The nest contained two eggs, and, thinking that the full complement had not been laid, I left it until the 8th October. The female was still sitting on that date, but no more eggs had been added to the original two, which were found to be slightly advanced in incubation.

This Fantail is very tame, and fond of frequenting the vicinity of dwellings, where it will often enter the kitchen and capture flies from the walls.

On the 11th October, I saw a pair of birds feeding two young ones, fully fledged, and able to fly.

The nest and eggs are here described for the first time.

Nest, somewhat similar to that of *Rhipidura albiscapa*, wine-glass shaped, without "foot," but with a very rudimentary "stem" or tail, composed of decayed wood, fibre from the sheaths of the *Kentia* palm-fronds, and fine grass, outwardly matted and bound together with spiders' webs, lined with fine grass; placed on a horizontal or forked twig, from 3 to 15 feet from the ground, in the scrubby thickets. Dimensions: 2 inches in width by 3 inches (including tail) in depth; egg-cavity, $1\frac{3}{4}$ inches in width by 1 inch in depth.

Eggs, clutch two; short oval in shape; texture of shell fine, surface somewhat glossy; colour creamy white, spotted or streaked (a) all over the shell, (b) on the upper quarter only, with pale brown and suffused slate markings, larger and forming a cap at the upper end. Dimensions: (a) 0.65×0.51 ; (b) 0.65×0.50 .

488(M).

65. MYIAGRA RUBECULA Latham.

Leaden Fly-catcher.

Myiagra rubecula, Ramsay, p.37. (Australia generally, Tasmania, S.E. New Guinea).

Hab.—Lord Howe Island(doubtful).

504(M).

66. CORACINA ROBUSTA Lath.

Black-faced Cuckoo Shrike; Blue Jay(L.H.I.).

Hab.—Lord Howe Island (visitor only). (Australia generally, New Zealand, *accid.*, New Guinea, Celebes, Molucca Is.).

A somewhat frequent visitor from the mainland, not elsewhere recorded.

512(M).

67. DIAPHOROPTERUS LEUCOPYGIUS Gould.

Sparrow(N.I.).

Symmorphus leucopygius, North, 'Nests and Eggs,' p.408.

Hab.—Norfolk Island.

This is one of the species peculiar to Norfolk Island, where it is found in considerable numbers. A bright and lively little bird, in general appearance it closely resembles *Lalage tricolor*, but it is smaller. In its habits, flight, and manner of catching insects on the wing it is very like *Microeca fascinans*. It perches on stumps or fences, from which it pounces on ground-insects, or flying upwards, takes others on the wing. Owing to its habit of collecting an early breakfast amongst the dew-drenched grass, its otherwise snow-white breast becomes discoloured with the reddish dust which settled on the grass-blades overnight. Its chief note is a single harsh chirp, like the first or last staccato notes of a cicada.

Dr. Metcalfe gives September as the regular breeding month of this species (North). I was not fortunate enough to find any nests with eggs, but during the month of November found two containing young birds. These nests were both built in introduced pine-trees growing close to a residence, and were open cup-shaped structures of moss, larger and more substantial than the nest of *Lalage tricolor*. I have since received two clutches of eggs, both taken in the township of Kingston, on the 20th February, 1909. The months of November and December, 1908, were exceptionally wet, and many of the land-birds took advantage of the abundant food-supply, and bred again from January to March, 1909.

Eggs, clutch two, occasionally three. Pale green ground-colour, slightly tinged with grey, with thick, irregularly shaped, longitudinal markings of different shades of olive-brown, and a few minute freckles scattered over the surface of the shell; on the larger end several obsolete markings of dull bluish-grey appear. Dimensions: 0.88×0.67 (North).

(1) $a, 0.9 \times 0.66$; $b, 0.86 \times 0.66$ (20th February, 1909).

(2) a and $b, 0.87 \times 0.67$ (20th February, 1909).

(3) $a, 0.92 \times 0.66$; $b, 0.82 \times 0.66$; c was broken, but was intermediate between a and b (11th December, 1908).

540(M).

68. *MERULA VINITINCTA* Gould.

Vinous-tinted Ouzel; Doctor Bird (L.H.I.).

Merula vinitincta Gould, p.59; Ramsay, p.37; North, 'Nests and Eggs,' p.412; Seebohm, Mon. Turdidæ, ii., p.137 (1902).

Hab.—Lord Howe Island.

A very common and exceedingly tame species, peculiar to Lord Howe Island, the "Doctor Bird" is seen everywhere, scratching amongst the dead leaves with the industry of a barnyard fowl, or perched on the low shrubs, emitting its sharp whistling chirp. Its local name is said to be derived from a sharp double knocking sound uttered when the bird is alarmed. Though so tame that one can approach quietly within a few feet, any sudden appearance of a human being, or a loud noise, will send it scolding away for a short flight, but it soon stops to reconnoitre, curiously

watching the intruder. It is also very suspicious, and will desert a nest either when building, with eggs, or even with young birds, if touched by a human hand.

The nest is a large loosely built structure, open, shallow, cup-shaped, outwardly of woven fibre from the sheaths of palm-fronds, and dead leaves, lined with dry grasses, placed at the foot of a palm amid the dead fallen fronds, on top of a stump, or in a mass of intergrown vines a few feet from the ground.

Eggs, clutch two, inclining to elongated-oval in form, slightly pointed at the thinner end, of a pale greenish-grey ground-colour, with freckles, dots, and horizontal markings of reddish-brown dispersed over the entire surface of the shell; in some places a few nearly obsolete blotches of purplish-grey appear. These eggs vary considerably in size and shape, some being short rounded ovals, and others long and pointed. The ground-colour varies from a distinct green to pale greyish, and the markings from bright red to dull purplish-red.

Dimensions :

(1) *a*, 1.21 × 0.81; *b*, 1.22 × 0.80 (18th October, 1907).

(2) *a*, 1.07 × 0.78; *b*, 1.10 × 0.80 (18th November, 1908).

(North) *a*, 1.15 × 0.77; *b*, 1.12 × 0.77.

541(M).

69. *MERULA FULIGINOSA* Latham.

Norfolk Island Ouzel; Guava Bird (N.I.).

Merula poliocephala Gould, p.528; Ramsay, p.37; North, 'Nests and Eggs, p.411; Seebohm, Mon. Turdidæ, ii., p.91 (1902).

Hab.—Norfolk Island.

The Norfolk Island Ouzel differs from the Lord Howe Island species in the colour of the head and neck, which are greyish in the adult bird. In habits and general characteristics it closely resembles *M. vinitincta*. The nest is also similar in size, shape and materials, but it is most frequently placed in a tree or shrub at a height of from six to twenty feet from the ground. A favourite position is amongst the matted thorny branches of the lemon tree, which has run wild and is found all over the Island.

Dr. Metcalfe informed me that this bird has two breeding seasons, (1) August to December, (2) March to May. During the latter season it lays four eggs, while two form the complement during the spring and summer breeding. The local name is said to be derived from the bird's habit of eating ripe guavas.

Eggs, colour and markings similar to those of *M. vinitincta*, but the average dimensions are slightly larger; three from different nests measured by North were (a) 1.18×0.83 ; (b) 1.21×0.82 ; (c) 1.19×0.8 . Those in my collection measure :

(1) a, 1.11×0.86 ; b, 1.18×0.85 (13th Oct., 1908).

(2) a, 1.13×0.85 ; b, 1.21×0.83 (11th Oct., 1908).

(3) a, 1.26×0.84 ; b, 1.12×0.83 (1st Dec., 1908).

(4) a, 1.12×0.88 ; b, 1.23×0.84 (1st Dec., 1908).

(5) a, 1×0.76 ; b, 1×0.74 (25th Dec., 1908.) This set is abnormally small, pale blue, with very faint markings,

646(M).

70. GRALLINA PICATA Latham.

Magpie Lark.

Hab.—Lord Howe Island (visitor only.) (Australia generally, Tasmania).

This bird, I was informed by several inhabitants, is a by no means infrequent visitor at Lord Howe Island. It has not been recorded elsewhere as a visitor to this Island.

668(M).

71. PACHYCEPHALA CONTEMPTA Hartert.

Lord Howe Thickhead; Robin, or Yellow Robin (L.H.I.).

Pachycephala gutturalis, Ramsay, p.37; Etheridge, 'Lord Howe Island,' p.9.

Pachycephala contempta Hartert, B.O.C. viii., p.xv. (1898).

Pachycephala howensis, North, Rec. Aust. Mus., v, p.125 (1903).

Hab.—Lord Howe Island.

The Australian Museum Memoir on Lord Howe Island follows Dr. Ramsay in identifying the Lord Howe Thickhead with *P. gutturalis* (*pectoralis*) of Latham. In 1903, North, having examined a series of skins, says "This species is closely allied to *Pachycephala gutturalis* Latham, of the Australian continent, but

from which the adult male may be distinguished by the olive-green tail, and the smaller and less distinct subterminal blackish-brown band. In some specimens the band is formed by a large oval spot in the centre of the web only, and which is entirely lost on the outermost feathers."

The notes of this Thickhead are heard in the lowlying scrubs and thickets of the settled part of the Island from "early morn till dewy eve," and even late into the night. It has one frequently repeated note resembling the words "Seed wheat," with a sharp rising inflexion on the latter syllable.

I was fortunate enough to find a nest and eggs of this species, hitherto undescribed, when strolling through the palm-glens, in company with Mr. J. B. Waterhouse.

The nest is an open cup-shaped structure, composed of strips of the inner sheathing of *Kentia* palm-fronds and vine-tendrils, lined with coarse dried grass, placed on a matted base of skeleton leaves, in a shrub thickly overgrown with lawyer-vines, about eight feet from the ground. Dimensions: 6 inches in width by $2\frac{1}{2}$ inches in depth; egg-cavity, $2\frac{3}{4}$ inches in width by $1\frac{1}{4}$ inches in depth.

Eggs, clutch two; oval in shape; texture of shell fine, surface glossy; colour white, spotted with small blackish-brown freckles sparsely distributed over the whole shell, and with large spots or blotches of sepia, and suffused greyish or slate blotches forming a distinct zone round the upper quarter. Dimensions: (a) 0.94×0.7 ; (b) 0.94×0.69 inch. These eggs very closely resemble the pearly white ground type of *P. pectoralis*.

678(M). 72. *PACHYCEPHALA XANTHOPROCTA* Gould.

Norfolk Island Thickhead; Tamey(N.I.).

Pachycephala xanthoprocta, North, 'Nests and Eggs,' p.409.

Hab.—Norfolk Island.

The Norfolk Island Thickhead is a very plain and sad-coloured bird, both sexes being alike in plumage. It is so remarkably tame that, even in that island-paradise of fearless birds, it has earned the local name of "Tamey." Its rich, liquid notes may

be heard in every patch of scrub, and any human being visiting its haunts is at once spied out and inspected with deep interest and curiosity. A pair of birds will hop on to the branches nearest the visitor's head, and with bright eyes full of questioning, each bird, uttering short interrogatory notes with head turned first to one side and then to the other, will accompany the intruder for some distance until its curiosity is satisfied.

The nest is characteristic of the genus, being an open cup-shaped structure of rootlets, lined with grass, rather larger and more loosely put together than that of *P. pectoralis*, and frequently supported on a mass of skeleton leaves. It is placed at no great height in "currajong," lemon, and other small trees, or in hanging masses of vines.

Eggs, clutch generally two, occasionally three (three to four, North, on the authority of Dr. Metcalfe). Elongated-oval, creamy to buffy-white ground, with spots and freckles of dark brown; or pale brown ground, with blotches and spots of rich brown, either scattered over the whole shell or forming a distinct zone at the larger end. They vary slightly in size and shape, and are generally of an elongated form.

Dimensions :

- (1) *a*, 1.02×0.75 ; *b*, 1.02×0.72 ; *c*, 1.01×0.72 (6th Nov. 1908).
 (2) *a*, 1.05×0.70 ; (*b*), 1.05×0.72 (5th Nov. 1908).

712(M). 73. *ZOSTEROPS CÆRULESCENS* Latham.

Silver-eye; Little Grinnell(N.I.).

Zosterops lateralis, North, Rec. Aust. Mus. v. p.337(1904).

Hab.—Norfolk Island. (E. and S. Australia, New Zealand).

This Australian species has, of recent years, taken up its abode in Norfolk Island, probably coming by way of New Zealand, as it is not found at Lord Howe Island.

715(M). 74. *ZOSTEROPS TEPHROPLEURA* Gould.

Grey-breasted Silver-eye; Little Silver-eye(L.H.I.).

Zosterops tephropleurus Gould, p.538; Ramsay, p.37; Etheridge, 'Lord Howe Island,' p.9.

Hab.—Lord Howe Island.

This is a smaller and less striking bird than *Z. strenua*, resembling *Z. caerulea* of Australia. I did not find its nest.

718(M). 75. *ZOSTEROPS STRENUA* Gould.

Robust Silver-eye; Big Silver-eye(L.H.I.).

Zosterops strenuus Gould, p.537; Ramsay, p.37; Etheridge, 'Lord Howe Island,' p.9.

Hab.—Lord Howe Island.

This very fine and large species of *Zosterops* is found in great numbers at Lord Howe Island, where its powerful song makes music all day long in the palm-glades and on the wooded hillsides. Its nest is large, loosely constructed, and cup-shaped, composed outwardly of palm-fibre, woven with dried grasses and lined with finer material of the same kind, placed amongst the masses of fibre clothing the under side of the crown of the *Kentia* palms; or in shrubs overgrown with vines. During October, 1907, I found a large number of old nests, many blown down and lying on the ground, but none containing eggs or young birds.* Dimensions : 4 to 5 inches in width by 2 inches in depth; egg-cavity $2\frac{1}{2}$ inches in width by 1 inch in depth.

719(M). 76. *ZOSTEROPS ALBIGULARIS* Gould.

White-breasted Silver-eye; Grinnell(N.I.).

Zosterops albigularis Gould, p.535; Ramsay, p.37; North, 'Nests and Eggs,' p.413.

Hab.—Norfolk Island.

This handsome Silver-eye is very plentiful in the vicinity of dwellings, and especially favours the fruit-gardens with its presence. It has a loud and not very musical note when in flocks, and a number of the birds arguing together make a noise similar to a mob of quarrelling house-sparrows. Solitary birds, however, occasionally indulge in a long-sustained liquid song, very pleasing to the ear.

* Mr. Herbert Wilson has since sent me a nest of this species containing two eggs, taken on 20th November, 1909. The eggs are of the usual *Zosterops* colour; pointed ovals. Dimensions : $a, 0.88 \times 0.58$; $b, 0.82 \times 0.58$.

Its nest is an open cup-shaped structure, $3\frac{1}{2}$ inches in diameter, formed almost entirely of dried grasses, very sparingly mixed with a few hairs or pieces of wool. It is generally placed amongst the matted twigs of a lemon tree, or concealed in the thick masses of grey-green Spanish moss hanging in streams from the pine boughs, or matted amongst the twigs of the "currajong" trees. It is generally a difficult nest to find owing to the selection of natural foundations upon which it is so constructed as to be practically invisible from below.

Eggs, clutch three to six, uniform pale blue, rather more inclined to stout ovals, and smaller than those of *Z. tenuirostris*. Dimensions of a clutch of six : *a*, 0.76×0.60 ; *b*, 0.74×0.59 ; *c*, 0.79×0.59 ; *d*, 0.77×0.56 ; *e*, 0.73×0.59 ; *f*, 0.71×0.54 (12th Nov., 1908).

720(M).

77. *ZOSTEROPS TENUIROSTRIS* Gould.

Long-billed Silver-eye; Grinnell(N.I.).

Zosterops tenuirostris Gould, p.563; Ramsay, p.37; North, 'Nests and Eggs,' p.412.

Hab.—Norfolk Island.

This species does not appear to be locally distinguished from *Z. albigularis*, than which it is much less common. Its nest is similar to that of the preceding species.

Eggs, clutch three to six, colour uniform pale blue, the texture of the shell being very fine and slightly glossy.

Dimensions :

(1)*a*, 0.84×0.59 ; *b*, 0.88×0.6 ; *c*, 0.85×0.59 (31st October, 1908).

(2)*a*, 0.92×0.64 ; *b*, 0.9×0.6 (12th November, 1908).

855(M).

78. *APLONIS FUSCUS* Gould.

Cūdginarūk(L.H.I.); Black Bird(N.I.).

Aplonis fuscus, Ramsay, p.37; North, 'Lord Howe Island,' p.45; North, 'Nests and Eggs,' p. 373.

Hab.—Lord Howe and Norfolk Islands.

This bird, allied to the mainland genus *Calornis*, is common to both Islands. It is a bold and noisy marauder, creating havoc

amongst the banana plantations and orchards. Its soft, slaty-grey plumage, darker in the male than in the female, is somewhat at variance with its bright orange-red eyes; and its assertive manner, attitudes, and loud challenging notes are not in keeping with its sober coat. I have often watched a pair attacking a bunch of bananas hanging to ripen under the verandah of the house where I was staying at Norfolk Island. The male would utter a few calls from an adjacent pine-tree, and then dart on to the iron roof, making a great clatter as he alighted. Then, whistling a sharp staccato note at short intervals, he would drop on the bananas, rip open the ripest, and swallow large pieces of fruit, uttering satisfied notes between mouthfuls. The female would follow, with less noise and assurance, and in a few minutes the empty banana skin only would remain. A sudden movement on my part would send the birds back to the pine-tree where they scolded for a while, and then returned to scoop out another banana.

The nest is a slight open structure of small twigs and dry grass, placed in the hollow spout of a dead limb, or (at Norfolk Island) in the trunk of a dead tree-fern, at varying heights from the ground. Some that I saw at Norfolk Island were within easy reach from the ground. The birds resort year after year to the same nesting-place, and, if robbed, will rebuild in the same spot. Breeding seasons, September to November, and February to March. The Lord Howe Island local name is onomatopoeic, based on the birds' usual cry. Eggs, bluish-green, sparsely freckled and blotched with pale red, chiefly towards the larger end. The eggs of a set generally vary considerably in size and shape. Clutch, four, occasionally five.

Dimensions :

(1) *a*, 1.02×0.75 ; *b*, 1.12×0.75 ; *c*, 1.03×0.77 ; *d*, 1.04×0.75 .
(Lord Howe, 15th Sept. 1907).

(2) *a*, 1.05×0.75 ; *b*, 1.02×0.75 ; *c*, 1.11×0.75 ; *d*, 1.12×0.72 ;
a and *b* are oval; *c* and *d*, biconical (Norfolk Island, 31st Oct. 1908).

(3) *a*, 1.04×0.75 ; *b*, 1.04×0.75 ; *c*, 0.91×0.77 ; *d*, 0.90×0.64 ;
(Norfolk Island, 20th Feb. 1909).

875(M). 79. STREPERA GRACULINA White.

Pied Crow-Shrike; Magpie(L.H.I.).

Strepera crissalis, Sharpe, Brit. Mus. Cat. iii, p.58, pl. ii.; Ramsay, p.37; Etheridge, 'Lord Howe Island,' p.10.

Hab.—Lord Howe Island. (Queensland, New South Wales, Victoria).

The Pied Crow-Shrike is found only on Lord Howe Island. It is very plentiful in the sheltered palm-glades in the vicinity of settlement, where its musical whistling call rings out with an almost human intonation. I was not fortunate enough to procure either nest or eggs, but was informed that it constructs a loose platform of twigs and small sticks on the thin outer branches of large trees, generally selecting one growing out from one of the "faces" or cliffs of Mount Lidgbird. Its breeding-haunts are in the hills, and the season is from July to September.

EXPLANATION OF PLATES L.-LIV.

Plate l.

Eggs of *Sterna fuliginosa* Gmelin, showing variations in markings and dimensions; nat. size.

Plate li.

Eggs (nat. size) of

1. *Gygis alba* Sparrm.[upper row].
2. *Micranous leucocapillus* Gould[lower row; first and second from the left].
3. *Procelsterna cinerea* Gould[lower row; third and fourth from the left].

Plate lii.

Eggs (nat. size) of

1. *Anous stolidus* Linn.[upper row].
2. *Phaëthon crubescens* Rothsch.[lower row].

Plate liii.

Fig.1.—Egg of *Gygis alba* Sparrm., in position as laid in a knot-hole in the horizontal branch of *Lagunaria Patersoni*.

Fig.2.—Nest and eggs of *Rhipidura cervina* Ramsay; one-half nat. size.

Plate liv.

Nest and eggs of *Pachycephala contempta* Hartert; one-half nat. size.



Hull, A. F. Basset, Arthur Francis Basset. 1910. "The birds of Lord Howe and Norfolk Islands." *Proceedings of the Linnean Society of New South Wales* 34, 636–693.

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