







Emu  
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# The Emu

A Quarterly Magazine to popularize the Study and Protection  
of Native Birds.

OFFICIAL ORGAN OF THE AUSTRALASIAN ORNITHOLOGISTS' UNION.



Editors { A. J. CAMPBELL, Col. Mem. B.O.U.  
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## EDITORIAL NOTE.

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IN completing Vol. VIII. of *The Emu*, the editors, on behalf of the Council of the A.O.U., again desire to express their grateful thanks to the authors of the various and valuable contributions to the journal. Without depreciating others, special thanks are due to Mr. H. L. White, Belltrees, Scone, N.S.W., for placing at the disposal of the Union the whole of Mr. S. W. Jackson's important field-notes and photographs taken during a recent trip to Northern Queensland. These notes are so original and valuable that it was deemed advisable by the Council to issue an extra Part (No. 5) as a conclusion to the present volume. It should also be mentioned, in justice to Mr. White, as well as an incentive to other wealthy and patriotic Australians to do likewise, that the expenses of engraving the 21 excellent half-tone and coloured blocks to illustrate Mr. Jackson's article have been generously defrayed by him.

Mr. Jackson's observations are undoubtedly valuable additions to the knowledge of Australian field ornithology. They are in the form of an acceptable and readable narrative of his daily doings for some months in the luxuriant "scrubs" of the North. Subsidized by Mr. White, Mr. Jackson went particularly in quest of the nest and eggs of the quaint Tooth-billed Bower-Bird (*Scenopæetes dentirostris*), and to observe its haunts and habits. Notwithstanding the many difficulties and privations endured (including an attack of the Johnstone River fever), Mr. Jackson succeeded admirably in his mission, and is to be congratulated by members accordingly.

In conclusion, the editors rejoice that *The Emu* is maintaining its character as an "outward and visible sign" of brotherhood between the ornithologists of the Commonwealth. Here, in this extra Part, there is an account of Queensland field work, undertaken by New South Welshmen, and published in Victoria. What could be more Federal in spirit?



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## ANNOUNCEMENTS.

Articles (technical papers should if possible be type-written) and communications intended for publication, also books and publications for notice, should be addressed to the Editors, *The Emu*, c/o MR. A. J. CAMPBELL, Custom-House, Melbourne.

MSS. of general articles should reach the editors at least six weeks prior to the issue of the number for which they are intended.

Occasionally, when funds permit, it is intended to issue Coloured Plates of hitherto unfigured Australian Birds. Voluntary subscriptions to a "COLOURED FIGURE FUND" are courteously invited from members.

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The price of *The Emu* to non-members is 4/- per copy. Extra copies may be had by members at half-price.







The Homestead at Yarrundi, near Scone, Upper Hunter River District, New South Wales.  
(The small house, immediately above the white cross, is where John Gould stayed during 1839-1840.)

FROM A PHOTO. BY SID. W. JACKSON.

# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. VIII.]

1ST JULY, 1908.

[PART I.

## A Synopsis of the Genera and Species of Cygninæ.

BY HARRY C. OBERHOLSER, WASHINGTON (U.S.A.)

THE few species of Swans known to science form a comparatively well-defined group, usually, and probably rightly, considered of sub-family rank in the great family *Anatidæ*. The genus *Coscoroba*, Reichenbach, by some authors associated with the *Cygninæ*, is undoubtedly a Duck, and belongs among the *Anatina*, although it forms to some extent a transition to the Swans.

With regard to the genera to be recognized in the sub-family *Cygninæ* there has been considerable difference of opinion, but most authors admit only two—not counting, of course, the recently described *Archæocycnus*, De Vis.\* Including this, there seem to be, however, five groups that are clearly of generic rank, and that rest upon characters quite as good as those adduced to separate the two current genera. The genus *Palæocycnus* (Stejneger), founded on the gigantic *Cygnus falconeri* of Parker, from Malta, seems to be undoubtedly valid, as this bird conspicuously differs from true *Cygnus* in its relatively short thigh bone, long tarsometatarsus, and in the very thick, abbreviated phalanges of the toes, showing thus no little vergence toward the *Anserinæ*. The separation of *Cygnus melancoryphus* as a generic type,† however, is not maintainable, since this species is strictly congeneric with those of *Cygnus* proper. Although the diagnostic points given by Dr. Stejneger for the separation of *Cygnus* from *Olor*‡ are all insufficient, there exist, nevertheless, excellent characters, both external and anatomical—particularly the latter—which, it is hoped, may now finally establish these much-abused groups. The genus *Olor* differs from *Cygnus* in lacking any knob, or tubercle, at the base of the culmen, in having a more or less evident bronchial dilatation, and in having the trachea looped and entering the sternum.

A key to the living genera of the sub-family sets forth their salient characters in more graphic form:—

- a.—Tail longer than middle toe with claw; tertials and scapulars smooth.

\* Ann. Queensl. Mus., No. 6, 1905, p. 11.

† Stejneger, Proc. U.S. Nat. Mus., v., 1882, pp. 183, 185.

‡ Proc. U.S. Nat. Mus., v., 1882, p. 183.

- b.*—Culmen without a prominent knob, or tubercle, at base; trachea looped and entering sternum; a more or less evident bronchial dilatation .. *Olor*
- b*<sup>1</sup>.—Culmen with a prominent knob, or tubercle, at base; trachea not looped, and not entering sternum; no trace of a bronchial dilatation .. .. *Cygnus*
- a*<sup>1</sup>.—Tail shorter than middle toe with claw; tertials and scapulars crisp .. .. *Chenopsis*

The various species of *Cygninæ* fall under their respective genera as below:—

Genus PALÆOCYCNUS (Stejneger).

*Palæocygnus*, Stejneger, Proc. U.S. Nat. Mus., v., 1882, p. 180.

*Type.*—*Cygnus falconeri* (Parker).

*Chars. gen.*—Similar to *Cygnus* and *Olor*, but phalanges of toes very short and thick; thigh bone relatively short; tarsometatarsus relatively long.

*Geographical Distribution.*—Malta.

PALÆOCYCNUS FALCONERI (Parker).

*Cygnus falconeri*, Parker, Proc. Zool. Soc. Lond., 1865, p. 752.

*Chars. sp.*—Those of the genus.

*Type Locality.*—Zebbug Cave, Malta.

*Geographical Distribution.*—Island of Malta.

While based on more or less fragmentary Pleistocene remains, this fossil species is, by reason of its very pronounced characters, undoubtedly generically as well as specifically distinct. Apparently it was about a third larger than *Cygnus olor*.

Genus OLOR (Wagler).

*Cygnus*, Brookes, Catal. Mus. Joshua Brookes, pt. ii., July, 1828, p. 102 (type, *Anas cygnus*, Linnæus, nec *Cygnus*, Bechstein).

*Olor*, Wagler, *Isis*, 1832, p. 1234 (type, *Cygnus musicus*, Bechstein = *Anas cygnus*, Linnæus).

*Cygnus*, Temminck, Man. d'Ornith., 2nd ed., iv., 1840, p. 526 (type, *Anas cygnus*, Linnæus, nec *Cygnus*, Bechstein).

*Type.*—*Anas cygnus*, Linnæus.

*Chars. gen.*—Tertials and scapulars smooth; culmen without prominent knob, or tubercle, at base; tail longer than middle toe with claw; trachea looped and entering sternum; a more or less evident bronchial dilatation.

*Geographical Distribution.*—Europe, Asia, Northern Africa, and North America.

*Key to the Living Species (Adults).*

- a.*—Bill and lores entirely black; nostrils in basal half of bill .. .. *Olor buccinator*.
- a*<sup>1</sup>.—Bill or lores with at least a small spot of yellow; nostrils at about middle of bill.

- b.*—Lores and bill black, with only a small spot of yellow (on the former) . . . . . *Olor columbianus*.  
*b*<sup>1</sup>.—Lores and whole basal portion of bill yellow.  
*c.*—Yellow of bill not extending to the nostrils; wing less than 555 mm.  
*d.*—Smaller; bill narrower (28–31 mm.)  
*Olor bewicki bewicki*.  
*d*<sup>1</sup>.—Larger; bill wider (30.75–36 mm.)  
*Olor bewicki minor*.  
*c*<sup>1</sup>.—Yellow of bill extending beyond nostrils; wing more than 555 mm. . . . . *Olor cygnus*.

## CLANGOCYCNUS,\* sub-gen. nov.

*Chars. sub-gen.*—Distance from the anterior angle of the eye to the posterior border of nostril not much, yet usually a little, greater than the distance from the latter to the tip of the bill; bill longer than head; tail commonly of 24 feathers; bronchial dilatation very large.

## OLOR BUCCINATOR (Richardson).

*Cygnus buccinator*, Richardson, in Swainson and Richardson's *Fauna Bor.-Amer.*, ii., 1831, p. 464.

*Cygnus passmori*, Hincks, *Journ. Linn. Soc. Lond., Zool.*, viii., 1864, p. 1 (Toronto, Ontario, Canada).

*Chars. sp.*—Lores and bill entirely black in adult; entire plumage white; wing 535–700 mm.

*Type Locality.*—Hudson Bay.

*Geographical Distribution.*—In summer from British Columbia, Alberta, Assiniboia, Wyoming, the islands and western side of Hudson Bay, formerly Indiana, Wisconsin, Iowa, Nebraska, Montana, and Idaho, north to Franklin Bay, Mackenzie, and to Alaska; in migration south to Ontario, New York, Delaware, Maryland, Ohio, Louisiana, Texas, Colorado, Arizona, and southern California.

This species differs from other members of the genus in several minor structural characters of more or less importance, particularly in the unusually large size of the bronchial dilatation, and possibly deserves even generic separation.

## Sub-genus OLOR (Wagler).

*Chars. sub-gen.*—Distance from the anterior angle of the eye to the posterior border of nostril much (about one-fifth) greater than the distance from the latter to the tip of the bill; bill not longer than head; tail usually of 20 feathers; bronchial dilatation small or of moderate size.

## OLOR PALOREGONUS (Cope).

*Cygnus paloregonus*, Cope, *Bull. U.S. Geol. and Geog. Surv. Terr.*, iv., No. 2, 1878, p. 388.

\* Κλαγγή, clangor; κύκνος, cygnus.

*Chars. sp.*—Tarsometatarsus ridged distally on external side, its shaft rather robust, posteriorly convex, with two lateral and a narrow median ridge, proximally convex on inner side, with deep concavity on outer side; third crest of hypotarsus reaching below foramen, and longer than second, fourth sending a keel over foramen; distal tendinous foramen large. Length of tarsometatarsus, 115 mm.; median transverse diameter, 11 mm.

*Type Locality.*—Silver Lake region, south-west central Oregon.

*Geographical Distribution.*—Silver Lake region, Oregon.

This fossil species was discovered in the Pliocene formation of Oregon, in the so-called Equus Beds of the now famous Silver Lake region, and was described chiefly from several tarsometatarsi. It is apparently nearest to *Olor columbianus*, though distinct and somewhat intermediate between the latter and *Olor buccinator*.\*

#### OLOR COLUMBIANUS (Ord).

*Anas columbianus*, Ord, Guthrie's Geogr., 2nd Amer. ed., ii., 1815, p. 319.

*Cygnus americana*, Sharpless, Doughty's Cab. Nat. Hist., i., No. 8, 1831, p. 185, pl. 16 (North America).

*Cygnus americanus*, Sharpless, Amer. Journ. Sci. Arts, xxii., 1832, p. 83 (North America).

*Chars. sp.*—Lores and basal portion of the bill black in adult, the lores with a small oval spot of orange or yellow; entire plumage white; wing, 510–575 mm.

*Type Locality.*—The Dalles, Oregon.

*Geographical Distribution.*—Extreme northern North America, from the northern part of Hudson Bay to Alaska; in migration west to the Commander Islands, south to Newfoundland, Massachusetts, Florida, Louisiana, Texas, New Mexico, Arizona, Southern California, Central Lower California, and Guanajuato, Mexico; casual on the Bermuda Islands; accidental in Scotland.

\* Doctor R. B. Sharpe cites (Handlist Gen. and Spec. Birds, i., 1899, p. 207) another fossil species, *Cygnus herenthalsi*, from the Crag clay (Pliocene), Belgium, credits it to Van Beneden, Bull. Acad. Belg., xxxii., 1871, p. 217, and in the *Zoological Record* for 1871, Aves, p. 30, gives the title of Van Beneden's paper as "Les Oiseaux de l'Argile Rupelienne et du Crag." The description of this species is, nevertheless, not to be found at the place designated (Bull. Acad. Roy. Sci. Belg., xxxii., 1871, p. 217), nor, indeed, anywhere in the volume. Furthermore, this title does not appear in the Royal Society's "Catalogue of Scientific Papers;" nor have we been able to discover any other reference to it, aside from those of Sharpe above quoted. There is, however, an article by Van Beneden, entitled "Les Oiseaux de l'Argile Rupelienne," in the same volume (Bull. Acad. Roy. Sci. Belg., xxxii., pp. 256–261, pl.), describing several fossil species, which Doctor Sharpe mentions in the *Zoological Record* for 1871, from pages near those of the mysterious citation of *Cygnus herenthalsi*—but pages on which they do not occur in the complete volume. It is possible that Van Beneden originally included the description of *Cygnus herenthalsi* in an advance separate, that later he changed his mind regarding some of the species, and omitted them from the paper as it finally appeared in the volume with a later pagination; for Doctor Sharpe cites in the *Record* at least one other bird—*Anser scaldi*—that is missing from the article in the "Bulletin."

## OLOR BEWICKI BEWICKI (Yarrell).\*

*Cygnus bewicki*, Yarrell, Trans. Linn. Soc. Lond., xvi., 1830, p. 453.

*Cygnus bewicki* (*err. typ.*), Eyton, Monogr. Anat., 1838, pl. 18.

*Cygnus melanorhinus*, Naumann, Vög. Deutschl., xi., 1842, p. 497, t. 297 (Möckern, near Leipzig, Germany).

*Cygnus altumi*, Bonaparte, Compt. Rend., xliii., 1856, p. 648 (Baedeker, MS.), (*nomen nudum*, in synonymy of *Olor minor*).

*Chars. sp.*—Lores and basal portion of bill yellow in adult, but this colour not extending forward to the nostrils; entire plumage white; wing, 477–535; exposed culmen, 92–95; width of bill, 28–31; height of bill at base, 39–43 mm.

*Type Locality*.—Yarmouth, England.

*Geographical Distribution*.—Northern Russia, northern Siberia east to the Lena River, Nova Zembla, and probably Spitzbergen, migrating to southern Siberia, Turkestan, the Caspian Sea, southern Russia, Dalmatia, Italy, southern France, Great Britain, and casually to Nepal.

It may be well to state that the above Nepal record has not been verified by examination of the specimen, so that it may prove to belong under *Olor bewicki minor*.

## OLOR BEWICKI MINOR (Keyserling and Blasius).

*Cygnus minor*, Keyserling and Blasius, Wirbelth. Europ., 1840, pp. lxxxii., 222 (Selenga River, Transbaikalia, Siberia).

*Cygnus bewicki jankowskii*, Alphéraky, Priroda i Okhota, Sept., 1904, p. 10 (Ussuri-land, south-eastern Siberia).

*Chars. sub-sp.*—Similar to *Olor bewicki bewicki*, but larger, the bill especially higher and broader. Wing, 490–550; exposed culmen, 90–101; width of bill, 30.75–36; height of bill at base, 37–48 mm.

*Type Locality*.—Selenga River, Transbaikalia, Siberia.

*Geographical Distribution*.—Eastern Siberia, west to the Lena River; in migration west to the Monjero River (a tributary of the Khatanga River), south to Sungaria, Mongolia, China, and Japan.

This form is, as recently shown by Mr. Buturlin, † easily distinguishable from true *Olor bewicki* by greater length, height, and

\* The bird described by Swinhoe under the name *Cygnus (Coscoroba) davidi* (Proc. Zool. Soc. Lond., 1870, p. 430) has sometimes been synonymized with *Olor bewicki*, sometimes treated as a distinct species of Swan; but by the best authorities it is now considered to be a Goose of some kind. It was described from a single and still unique specimen obtained by Père David in the market of Tientsin, Northern China, and now mounted in the Lazarist Museum in Paitang, at Peking. The original diagnosis is as follows:—

“It is smaller than *Cygnus bewicki* (Yarr.), with the neck about a third shorter, is entirely white, with the bill vermilion colour, having a black dertrum, and the legs and feet orange-yellow. Specimens of *C. musicus* and *C. bewicki* were ranged alongside. Its nearest ally, of course, is *C. coscoroba* of Chili; but it is larger than that, and has the wing white throughout. It would appear to be the northern representative of that curious form of Swan.”

† *Ibis*, 1907, pp. 650–652.

especially breadth of bill, less certainly by greater length of wing, although there are apparently no reliable colour characters.

For the proper name of this Swan we must, however, undoubtedly go back to *Cygnus minor* (Keyserling and Blasius),\* based on the *Cygnus olor* (var. B, *minor*) of Pallas.† Indeed, Keyserling and Blasius quote "*Cygnus minor* (Pallas),"‡ and transcribe part of that author's description§; but a glance at Pallas's page will serve to show that he did not use the term *minor* in a nomenclatural sense, but merely to designate informally the smaller of two forms of his *Cygnus olor*. Pallas gives the dimensions of a specimen from the Selenga River, which should therefore stand as the type locality. These dimensions clearly indicate that his bird belonged to the large east Siberia race, which Mr. Alphéraky later named *Cygnus bewicki jankowskii* ||; and in so far as pertinent are—converted from English inches and lines to millimeters—exposed culmen, 101; height of bill at base, 45; width of bill, 32.3.

#### OLOR CYGNUS (Linnæus).

*Anas cygnus*, Linnæus, Syst. Nat., ed. 10, i., 1758, p. 122.

*Cygnus musicus*, Bechstein, Gemeinn. Naturg. Vög. Deutschl., iv., 1809, p. 830, pl. xxxv. (Thuringia, Germany).

*Cygnus melanorhynchus*, Meyer, in Meyer and Wolf, Taschenb. Deutsch. Vogelk., ii., 1810, p. 498 (Geinsheim, on the Rhine, Germany).

*Cygnus islandicus*, Brehm, *Isis*, 1830, p. 1125 (Iceland); Brehm, Handb. Naturg. Vögel. Deutschl., 1831, pp. 833, 1035, pl. xli., fig. 1.

*Cygnus ferus*, Eyton, Monogr. Anat., 1838, p. 101 (Great Britain).

*Cygnus xanthorhinus*, Naumann, Vög. Deutschl., xi., 1842, p. 478, pl. 296 (Germany).

*Cygnus linnei*, Malm, Gotebs. och Bohusl. Fauna, 1877, pp. 90, 343 (Göteborg, Sweden).

*Chars. sp.*—Lores and basal portion of bill to beyond nostrils yellow in adult; entire plumage white; wing, 558–660 mm.

*Type Locality*.—Sweden.

*Geographical Distribution*.—Arctic Europe and Asia, including Iceland, and formerly Greenland, migrating to Japan, China, Turkestan, Persia, Asia Minor, Palestine, lower Egypt, Algiers, and Spain, casually to southern Greenland and northern India.

There seems to be no sufficient reason for rejecting the Linnæan specific name *cygnus* as applied to this species, although many authors have used *musicus* (Bechstein), apparently, for the most part at least, to avoid the tautonymous combination *Cygnus cygnus*; but even this invalid objection is done away with when the bird enters the genus *Olor*.

\* Wirbelth. Europ., 1840, p. lxxxii., p. 222.

† Zoogr. Rosso-Asiat., ii., 1811, p. 214.

‡ Wirbelth. Europ., 1840, p. lxxxii.

§ *Ibid.*, p. 222.

|| Priroda i Okhota, Sept., 1904, p. 10.



## Genus CYGNUS (Bechstein).

*Cygnus*, Bechstein, Ornith. Taschenb. Deutschl., ii., 1803, p. 404, note (type, *Anas olor*, Gmelin).

*Sthenelus*, Stejneger, Proc. U.S. Nat. Mus., v., 1882, pp. 183, 185 type, *Anas melancorypha*, Molina).

*Sthenelides*, Stejneger, Stand. Nat. Hist., iv., 1885, p. 143 (type, *Anas melancorypha*, Molina).

Type.—*Anas olor*, Gmelin.

Chars. gen.—Tertials and scapulars smooth; culmen with a prominent knob, or tubercle, at base; tail longer than middle toe with claw; trachea not looped, and not entering sternum; no trace of a bronchial dilatation.

Geographical Distribution.—Europe, central Asia, northern Africa, and southern South America.

## CYGNUS OLOR (Gmelin).

*Anas cygnus*, B, Linnæus, Syst. Nat., ed. 10, i., 1758, p. 122.

*Anas cygnus (mansuetus)*,\* Latham, Gen. Syn. Suppl., i., 1787, p. 297 (Great Britain).

*Anas olor*, Gmelin, Syst. Nat., I., ii., 1788, p. 501.

(?) *Anas dircea*, Hermann, Observ. Zool., 1804, p. 139.

*Cygnus gibbus*, Bechstein, Gemeinn. Naturg. Deutschl., iv., 1809, p. 815 (Thuringia, Germany).

*Cygnus sibilus*, Pallas, Zoogr. Rosso-Asiat., ii., 1826, p. 215 (Russia).

*Cygnus mutus*, Forster, Synop. Cat. Brit. Birds, 1817, p. 64 (Great Britain), (*nomen nudum*).

*Cygnus gibbosus*, Kuhl, Büff. Fig. Av. Nom. Syst., 1820, pp. 16, 26 (Meyer, MS.), (*nom. nov. pro Anas olor*, Gmelin).

*Cygnus mansuetus*, Fleming, Hist. Brit. Anim., 1828, p. 126 (Eastern Europe and Asia).

*Cygnus immutabilis*, Yarrell, Proc. Zool. Soc. Lond., 1838, p. 19 (Maidstone, Medway River, Kent, England).

*Cygnus sibilans*, Nilsson, Skand. Fauna, Fogl., 3rd ed., ii., 1858, p. 386 (*err. typ. pro Cygnus sibilus*, Pallas).

*Cygnus tuberculirostris*, Dubois, Pl. Col. Ois. Belg., iii., 1860, p. 300.

*Cygnus unwini*, Hume, *Ibis*, 1871, p. 413 (along the Jubbee, on the borders of the Hazara and Rawulpindee districts, north-western India).

*Cygnus urwini*, Giebel, Thes. Ornith., i., 1872, p. 857 (*err. typ. pro Cygnus unwini*).

*Anas cygnas*, Tegetmeier, Reprint of Boddaert's Tabl. Planch. Enlum., 1874, p. 54. (*err. typ. pro Anas cygnus*).

*Cygnus pelzelni*, Stejneger, Proc. U.S. Nat. Mus., v., 1882, p. 197 (Lake Menzaleh, Egypt).

*Cygnus olor*, var. *domestica*, Salvadori, Cat. Birds Brit. Mus., xxvii., 1895, p. 37 (*nom. nov. pro Cygnus immutabilis*, Yarrell).

\* Not a valid specific or sub-specific term; added to the name *cygnus* merely as explanatory.

*Chars. sp.*—Inner webs of outer three primaries and outer webs of second, third, and fourth sinuated; webs of feet straight, not scalloped; entire plumage white; lores, frontal tubercle, mandible, base of maxilla, with its edges and nail, black, the rest of bill reddish-orange; legs and feet black; wing, 535–685 mm.

*Type Locality.*—Russia.

*Geographical Distribution.*—Denmark, southern Sweden, north-eastern Germany, the valley of the lower Danube, Turkey, and Greece; east to Bulgaria, Transylvania, southern and central Russia, Turkestan, Mongolia, and Dauria; south in migration to Great Britain, Spain, Portugal, Morocco, Algiers, Egypt, Syria, Asia Minor, and north-western India.

The name *Cygnus gibbus* (Bechstein)\* has been employed for this species by Doctor L. Stejneger,† on the ground that *Anas olor* (Gmelin)‡ is preoccupied by *Anas olor* (Pallas),§ but, as claimed by Count Salvadori,|| the latter name, being merely a Latin substantive uncombined with a generic term, is not used in a technical specific sense, and therefore cannot be cited in nomenclature. The Swan described by Yarrell under the name *Cygnus immutabilis*¶ appears to be undoubtedly nothing more than a semi-domesticated variety. Both *Cygnus unwini* (Hume)\*\* and *Cygnus pelzelni* (Stejneger)†† are quite as certainly based on the immature stage of the present species.

#### CYGNUS MELANCORYPHUS (Molina).

*Anas melancorypha*, Molina, Sagg. Stor. Nat. Chili, 1782, p. 234 (Chile).

*Anas melancorypha*, Molina, Sagg. Stor. Nat. Chili, 1782, p. 344 (Chile).

*Anasni gricollis*, Gmelin, Syst. Nat., I., ii., 1778, p. 502 (Falkland Islands, Rio de la Plata, and Straits of Magellan).

*Anas melanocephala*, Gmelin, Syst. Nat., I., ii., 1788, p. 502 (Chile).

*Anas melancorhynchus*, Lesson, Compl. Buffon, ix., 1837, p. 528 (*nom. emend. pro Anas melancorypha*, Molina), Falkland Islands, Straits of Magellan, Chile, and Rio de la Plata).

*Anas melancoryphea*, Lesson, Rev. Zool., 1839, p. 323 (*nom. emend. pro Anas melancorypha*, Molina).

*Chars. sp.*—Inner webs of outer four primaries and outer webs of second, third, fourth, and fifth sinuated; webs of feet scalloped; head and most of neck black; chin, a narrow stripe surrounding the eye and reaching backward toward the hind-neck, together with all the rest of the plumage, white; bill plumbeous, the nail white, the base and knob red; feet and legs pale flesh colour; wing, 395–450 mm.

*Type Locality.*—Chile.

\* Gemeinn. Naturg. Deutschl., iv., 1809, p. 815.

† Proc. U.S. Nat. Mus., v., 1882, p. 189.

‡ Syst. Nat., I., ii., 1788, p. 502.

§ Sv. Vetensk.-Akad. Handl., xl., 1779, p. 27 (note).

|| Cat. Birds. Brit. Mus., xxvii., 1895, p. 26.

¶ Proc. Zool. Soc. Lond., 1838, p. 19.

\*\* *Ibis*, 1871, p. 413.

†† Proc. U.S. Nat. Mus., v., 1882, p. 197.

*Geographical Distribution.*—Southern Brazil, Uruguay, Paraguay, Argentine Republic, Patagonia, Chile, and the Falkland Islands.

This very distinct species Doctor Stejneger has generically separated from *Cygnus olor* on the strength of the slight difference in the sinuation on the outer primaries, the difference in the outline of the webs between the toes, and the extent of the down on the sides of the bill in the young; but these characters seem to us hardly more than specific.

Genus CHENOPIS (Wagler).

*Chenopsis*, Wagler, *Isis*, 1832, p. 1234 (type, *Anas atrata*, Latham).

*Chenopsis*, Reichenbach, *Naturl. Syst. Vög.*, 1852, p. x. (type, *Anas atrata*, Latham), (*nom. emend. pro Chenopsis*, Wagler).

*Type.*—*Anas atrata*, Latham.

*Chars. gen.*—Tertials and scapulars crisp; culmen without a knob at base; tail shorter than middle toe with claw; trachea very slightly looped; no trace of a bronchial dilatation.

*Geographical Distribution.*—Australia and Tasmania; formerly New Zealand and the Chatham Islands.

CHENOPIS ATRATA (Latham).

*Anas atrata*, Latham, *Index Ornith.*, ii., 1790, p. 834.

*Anser novæ-hollandiæ*, Bonnaterre, *Encycl. Meth. Ornith.*, i., 1791, p. 108 (near Port Jackson, New South Wales, Australia).

*Anas plutonia*, Shaw, *Natur. Miscell.*, iii., 1791, pl. 108 (New South Wales, Australia).

*Chars. sp.*—Plumage brownish-black, the primaries and secondaries pure white; bill red, with a broad band of white near the tip; legs and feet black; wing, 428–508 mm.

*Type Locality.*—Lakes of Australia.

*Geographical Distribution.*—Australia, except the central northern part; Tasmania.

CHENOPIS SUMNERENSIS (Forbes).

*Chenopsis sumnerensis*, Forbes, *Ibis*, 1890, p. 264.

*Chars. sp.*—Similar to *Chenopsis atrata*, but larger.

*Type Locality.*—Monck's Cave, Sumner, near Christchurch, New Zealand.

*Geographical Distribution.*—New Zealand and the Chatham Islands.

This interesting addition to the extinct fauna of New Zealand was first brought to light in Monck's Cave, at Sumner, a few miles from Christchurch. The original material consisted of three complete coracoids, with the distal and proximal portions of a humerus. The species has since been discovered in various other parts of New Zealand, as well as on the Chatham Islands, in which latter locality it is said to have been evidently very numerous. The first published account seems to be the one above cited, for although the species was supposedly on exhibition at the meeting of the Philo-

sophical Institute of Canterbury, New Zealand, held on 3rd October, 1889, we have not been able to locate a reference in *The Transactions of the New Zealand Institute* earlier than vol. xxiv., for 1891 (1892), p. 188, which, it will be observed, is considerably later than the note in *The Ibis*. It apparently has never been fully nor formally described, and has been either overlooked or ignored by writers on the Swans, including Count Salvadori and Dr. Sharpe. I have not had opportunity to examine any pertinent material, but Dr. Henry O. Forbes, the discoverer of the species, assures me in a recent letter that he still considers it different from *Chenopsis atrata*. Since it was undoubtedly indigenous to New Zealand, there is much reason to suppose that it is really distinct, though perhaps but sub-specifically.

#### CHENOPSIS NANUS (De Vis).

*Chenopsis nanus*, De Vis, Annals Queensland Museum, No. 6, 1905, p. 13.

*Chars. sp.*—Similar to *Chenopsis atrata*, but about one-third smaller; humerus having the trochlea ulnaris, the trochlea radialis, and the exterior epicondyle relatively smaller; tibia having its shaft actually as well as relatively broader, and also the bridge over the extensor tendon broader.

*Type Locality.*—Lower Cooper's Creek, Lake Eyre, South Australia.

*Geographical Distribution.*—Vicinity of Lake Eyre, South Australia.

This apparently distinct species, of Pliocene or Early Pleistocene age, was based on portions of the coracoid, humerus, tibia, tarso-metatarsus, and pelvis. The type locality aside, remains were recorded by the describer from Malkuni, Wurdulumankula, and Unduwumpa, all in the region about Lake Eyre.

#### Genus ARCHÆOCYCNUS (De Vis).

*Archæocynus*, De Vis, Annals Queensland Museum, No. 6, 1905, p. 11.

*Type.*—*Archæocynus lacustris* (De Vis).

*Chars. gen.*—Similar to *Chenopsis*, but sternal joint of coracoid relatively larger and more deeply locked; humerus having an isolated tubercle proximad of the interior epicondyle; radius having its shaft more trihedral, its head relatively smaller; tarso-metatarsal ridges guarding the flexor tendons of the foot stronger.

*Geographical Distribution.*—Vicinity of Lake Eyre, South Australia.

#### ARCHÆOCYCNUS LACUSTRIS (De Vis).

*Archæocynus lacustris*, De Vis, Annals Queensland Museum, No. 6, 1905, p. 11.

*Chars. sp.*—Those of the genus. Additionally it differs from *Chenopsis atrata* as follows:—Ridge separating the upper surface of

the coracoid from that external to it much more convex and more prominent, but without a raised limiting line of muscular attachment; oblique ridges on visceral surface of coracoid less regular, less continuous, and less numerous, thinner, and more sharply raised; entepicondyle not prolonged distally so as to give the end of the humerus a squarish appearance; the trochlea radialis comparatively small; shaft of femur stouter; linea aspera somewhat less pronounced; depth across the outer condyle of the distal end of tibia much less, the two condyles of nearly or quite the same length; bridge over the tendon of the *extensor digitorum communis* muscle much narrower.

*Type Locality.*—Lower Cooper's Creek, Lake Eyre, South Australia.

*Geographical Distribution.*—Vicinity of Lake Eyre, South Australia.

The remains which formed the basis of the description of this species consist of coracoid, humerus, radius, ulna, femur, tibia, tarsometatarsus, and vertebra; and represent a bird somewhat heavier than *Chenopsis atrata*. They were found in the Pliocene or Lower Pleistocene formation at the following localities about Lake Eyre:—Lower Cooper's Creek, Malkuni, Kalamurina, Wankamamina, Unduwumpa, and Wurdulumankula.

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## A Trip to the Upper Hunter River District, New South Wales.

BY SIDNEY WM. JACKSON, A.O.U., CHATSWOOD, N.S.W.

To be first in the field of discovery is one of those prizes that await naturalists, explorers, and scientists who go ahead to make the path easy for those who follow; generally speaking, it is the only prize, yet to those who win it the knowledge of being first on untrodden paths has a value not measured by a money standard. In the naturalist's field it is not easy in these days to occupy this enviable position, for the world is not as wide as it was; and therefore the next best thing is to follow in the track of our earlier leaders, tracing step by step the course of their investigations, and marking note by note all that they saw and recorded.

Such was my pleasant lot when, during a recent visit to the valley of the Upper Hunter, New South Wales, I was fortunately enabled to go over the very ground traversed in 1839 and 1840 by the late famous ornithologist, Mr. John Gould, F.R.S., &c., London, from which he secured so many interesting specimens. The Brisbane mail train often carried me to certain happy hunting grounds near Ourimbah, on the Northern line, situated about 60 miles from Sydney and some 5 or 6 miles from the coast-line. It is a belt of country timbered with dense sub-tropical forest, offering a splendid field for research, and has become familiar to me in

rambles of many weeks' duration. In December of 1907, however, I had the opportunity, in response to a kind invitation from Mr. H. L. White, of Belltrees station, of again going further north, and of visiting the district lying east and west of Scone, made famous by the interesting accounts which Gould left of his observations and collections. I left the iron road at Scone, one of the prettiest townships on the Northern line, situated in the rich pastoral region of the Upper Hunter, about 200 miles north of the New South Wales capital. Here I was in touch with localities frequently referred to by the great naturalist in his work on the birds of Australia. Segenhoe, Dartbrook, Yarrundi, and Aberdeen, and, further up the Hunter, Belltrees and Ellerston, had before my visits only been names to me, but were now to be mine by personal experience. These places will be found quoted by Gould in his great book, and also in his "Handbook to the Birds of Australia," *vide* vol. i., pages 12, 31, 84, 96, 470, 480, 528, 539, 547, 566, &c.; vol. ii., pages 19, 84, 91, 104, 208, 219, 240, 328, 365, 370, 377, &c. Of course the progress of settlement and the expansion of the railway system have effected considerable changes; large areas of forest have yielded to axe and plough, yet birds are still there in large variety, and in the course of my visits I noted nearly ninety species, in many cases characteristic of that and similar districts only. Yarrundi afforded special points of interest. When Gould was there, in 1839 and 1840, the homestead, which was then occupied by the Coxen family, was his headquarters, and is shown in the accompanying photograph, taken by myself. Times and localities have altered since then, as one may gather from the recorded fact of his securing his first Little Eagle (*Nisaietus morphnoides*), with its nest and egg, on the flats near the station. In those days the *Falconidæ* were numerous about there, as Gould referred to noticing about forty Brown Hawks in one tree close by. Possibly the abundance of game birds then existing would account for this, as the Bustard or Wild Turkey (*Eupodotis australis*) was then very common in the district, though now it is considered a rare bird. As I drove along the road to Yarrundi on the first morning of my stay the grasshoppers were very much in evidence, rising in clouds as we disturbed them, pelting our faces as we drove through them, and then settling again behind us. Rich, but not rare, must have been the daily banquet of the Magpies and other insect-feeders of the district! It was not long before we found ourselves amongst the heavy timbers, which to a great extent are still in their original luxuriance and splendour. The birds that first morning were sheltering from the heat, and their silence was somewhat notable, still signs that the breeding season was not yet over were soon noticeable. Amongst the nests which I first dropped across were those of the Bee-eater (*Merops ornatus*) and

Pardalote (*Pardalotus punctatus*), which were built in the banks of the Dartbrook, opposite Yarrundi homestead, and elsewhere. The same morning's discoveries included the nests of the Brown Tree-creeper (*Climacteris scandens*), Noisy Miner (*Myzantha garrula*), Brown Hawk (*Hieracidea orientalis*), Black-faced Cuckoo-Shrike (*Graucalus melanops*), Babbler (*Pomatorhinus*), and Laughing Jackass (*Dacelo gigas*), &c. The place was pregnant with suggestion. Seventy years ago, when the whole of this country was dense forest, Gould had entered on his work—work that we can never appreciate too highly; to-day, on the ground he traversed, one can stand and enjoy the heritage of knowledge he left us. Times change and districts alter; some of the forest has disappeared, yet in wide areas of angophora and eucalyptus timber the same brilliant Australian sunshine filters through the foliage or dances in the mirage on the distant plain, whilst everywhere the birds that the great naturalist knew and loved so well add their beauty and interest to the scene.

A mid-day halt in grateful shade, a rest for the patient horse and the pipe of contentment for ourselves, helped to an appreciative sense of well-being, but I was not minded to leave this corner of Gould's collecting grounds without a few mementoes of my first visit, so, as I had not that day come prepared for tree-climbing, I turned my attention to insect life, and rolled over some logs in search of beetles and snails (land shells). Of these latter I found several, amongst which was *Helix brevipila* and a *Pupa*, a small and interesting snail, which, as it appeared to be a new species, I propose naming *Pupa gouldi* as a name appropriate to locality and occasion. I also found about a dozen beetles, comprising *Carabidæ*, *Elateridæ*, and *Staphylinidæ*, and these specimens are now in my collection, accompanied by interesting data of authentication. Returning to Scone to a welcome meal at the Willow Tree Hotel, I was met by Mr. H. L. White, and in the course of a couple of hours, in company with that genial kindred spirit, I was driving along behind a fine pair of horses to the well-known Belltrees station. Our course lay round the east end of Scone mountain range, and over the Segenhoe flats, which lie between it and the Brush or Prickly Pear Mountain. It was here in 1840 that one of Gould's camps was situated, but the thick forest of his time is replaced by a sparse timbering of forest apple trees (*Angophora*); there are still, however, numbers of the birds which he mentions as having seen, amongst which I notice the White-fronted Bush-Chat (*Ephthianura albifrons*) and the Spotted-sided Finch (*Staganopleura guttata*), perched in rows on the fences or wheeling and flitting through the roly-poly or salt-wort weed (*Salsola kali*), whilst the flash of the brilliant Bee-eaters (*Merops ornatus*) through the sunlight seemed like a lightning-streak tinged with green and red; these last were breeding in

good numbers in the banks of the Page River, a tributary of the Upper Hunter, and in addition to them I also noticed the following birds in the same locality, viz. :—The Dollar-Bird or Roller (*Eurystomus pacificus*), White-fronted Heron (*Notophox novaehollandiæ*), Little Cormorant (*Phalacrocorax melanoleucus*), Red-capped Dottrel (*Ægialitis ruficapilla*), Wood-Duck (*Chenonetta jubata*), Black-throated Butcher-Bird (*Cracticus nigrigularis*), Sacred Kingfisher (*Halcyon sanctus*), Nankeen Kestrel (*Cerchneis cenchruides*), Rosella Parrot (*Platycercus eximius*), Black-fronted Dottrel (*Ægialitis melanops*), Brown Flycatcher (*Micræca fascians*), White-shouldered Caterpillar-eater (*Lalage tricolor*), Pallid Cuckoo (*Cuculus pallidus*), Grey Shrike-Thrush (*Collyriocincla harmonica*), Black-and-White Fantail (*Rhipidura tricolor*), Wedge-tailed Eagle (*Uroæetus audax*), Whistling Eagle (*Haliastur sphenurus*), Swamp-Hawk (*Circus gouldi*), Friar-Bird (*Philemon*), Oriole (*Oriolus*), Babbler, Pied Grallina (*Grallina picata*), Straw-necked Ibis (*Carphibis spinicollis*), Raven (*Corone australis*), Scaly-breasted Lorikeet (*Psittenteles chlorolepidotus*), &c. We came to many crossings of the tortuous river from the western end of the Brush Mountain, leaving on our left rear a mountain composed of loose basalt boulders, dotted with patches of scrub, which appeared to give admirable shelter for the smaller birds, such as Fantails, Tits, &c.; it was a curious formation, somewhat similar to that of a hill with which I am very familiar in the Clarence River district (N.S.W.), known as Glen Ugie Peak, and styled by geologists a "volcanic blow"; apparently both districts have geological features in common. Still another dip down and over the Page, and we arrive at the village of Gundy, close to which I saw the Black-fronted Dottrel industriously earning his living on the shingly slopes of the Page River. Here a rest was made before breasting the long rise to the top of a neighbouring mountain, from which an exquisite view of the Upper Hunter River valley is to be had, with the Arden Hall homestead nestling into the foothills on the right bank of the river. A quick drive down a very long, winding road, brought us across the Upper Hunter waters. The country here to me was full of interest. Several hares were disturbed, and the birds I noticed particularly plentiful at this spot were the Black-breasted Plover (*Zonifer tricolor*), Red-capped Dottrel, Babbler, Magpies (*Gymnorhina*), Rosella Parrots, &c. After crossing the ford we passed through some really pretty country for several miles, then, after another drive through the river and up the opposite cutting, we were confronted with the 22-mile post, a record of the distance covered. Here we were met by the son of my kind host, Master Alfred White, aged six, who has inherited his father's enthusiasm for natural history, and is well versed in the names, habits, and haunts of the birds of the



district. The big gates of the home paddock opened with hospitable invitation, and a rapid run through park-like country brought us to Belltrees homestead, the object of the day's journey.

I remained at Belltrees several days, and it seemed as if my host and hostess had tried to find out how much comfort, interest, and pleasure they could pack into the all too short time available for my visit. The very large and picturesque homestead is an essentially modern establishment, yet one close held to the warm heart of Mother Nature. Telephones connect it with Scone and the various out-stations, water and gas are laid on, so that it is difficult to realize the distance at which it is situated from the crowded centres of population. Nature and art have both been levied on to add to its charm. The surrounding country has not been robbed of its natural beauty; the fine station buildings, the pretty brick church and beautiful gardens, the huge woolshed and outbuildings, all harmonize with their setting, whilst Mount Woolooma, towering up nearly 4,000 feet above the whole landscape, gold-clad in the morning and purple-hued in the evening, seems to satisfy the last requirement of the artist's eye. The first day after my arrival was chiefly spent in arranging the interesting increase which Mr. White had made to his collection of eggs by the addition thereto of what had been recently known as the "Jacksonian Oological Collection." Amongst Mr. White's collection I was greatly interested in the remarkable egg of the Black-eared Cuckoo (*Mesocalius palliolatus*), which he had found on the station a few months before; another interesting item was a pair of young Whistling Eagles taken from a nest in a river oak a few days prior to my arrival. These Eaglets, with other birds, have since been forwarded by Mr. White to Mr. David Seth-Smith, F.Z.S., for the London Zoological Gardens. A walk over the station suspension bridge brought me into clumps of stately river oaks, and here bird-life was plentiful; both Mr. White and myself were amused to find the bottle-shaped nest of the Spotted-sided Finch built on top of the mud cup-shaped home of the Magpie-Lark, and located on a limb of a river oak overhanging the water. The bridge just mentioned is a fine structure. I wonder what Gould would have thought if he could have foreseen it and the rest of the station improvements? It is hung on steel cables, above flood mark, and was erected to meet the needs of sheep transport at shearing time. Close by I was shown a mulberry tree, in which, to my great surprise, Mr. White told me that he had found a Reed-Warbler's (*Acrocephalus australis*) nest; it certainly was a novel nesting-place for a waterside, sedge-haunting bird, but during my stay I was also shown a nest of the same bird built between three upright stalks of the blue weed or wild verbena (*Verbena bonariensis*)—*vide* reference data No. 105, page

11, of my book on "The Jacksonian Oological Collection." This nest was a clever piece of bird architecture. The patient little builders had utilized the long, green, silken weed growing on logs and stones in the waters near by, and wound it whilst still wet round the whole structure, giving it a smoothly moulded appearance. It is noticeable throughout the Belltrees estate that the birds are fearless to a marked degree, so that the observer gets a fine chance to note their habits. This is due to Mr. White, who, animated by a love of the feathered creation, will not permit their wanton destruction; it is a thousand pities that other large property-holders do not adopt the same humane course.

The next day I betook myself to that part of the station lying west of the great woolshed. I had seen a fine Black-shouldered Kite (*Elanus axillaris*) fly in that direction with his prey, and hoped to find his nest, but, though I searched carefully, I did not meet with success. During my ramble I disturbed a pair of Black-breasted Plovers, and after half an hour's hunt located their nest, with four eggs in it, and they greatly resembled the dark ground upon which they were laid. In the drooping eucalyptus foliage I found several nests of the Yellow-rumped Tit (*Acanthiza chrysorrhoa*), nearly all of which contained young birds; in the orchard near the river the Masked and the White-browed Wood-Swallows (*Artamus personatus* and *superciliosus*) were plentiful, and many of their nests were to be found in the fruit trees. The parent birds strongly protested against my intrusion, especially in the case of one nest, which was so close to the ground that Master White could almost reach it as he stood. There was, I found, a reason for the bird's marked disquiet—up at the homestead garden I had been introduced to a young pet Laughing Jackass, which, strangely enough, was being brought up under the strict discipline of an old bird that was certainly not its parent, and the old one had been raiding the unfortunate Wood-Swallows' nests to provide "Jackie" with plump fledglings therefrom. I next followed the river down on the other bank, and round the big horseshoe bend, past the station race-course; here the Pardalote, Bee-eater, and Yellow-rumped Tit were nesting freely, and a large flock of White Cockatoos (*Cacatua galerita*) held noisy convention in the river oaks. At this spot I struck a huge patch of variegated Scotch thistle (*Cardamis lanceolatus*), the largest I have ever seen, some of the stems reaching a height of 7 feet, and in walking through this prickly thicket I flushed both Coots (*Fulica australis*) and Land Rails (*Hypotaenidia philippincensis*), which promptly took refuge in the weeds on the river bank. In the oaks and eucalypts close by I found two nests of the Rosella Parrot, and saw three varieties of Parrakeets—namely, the Red-backed (*Psephotus leucatonotus*), the Red-shouldered Grass (*Neophema pulchella*),





View of Mount Woolooma, as seen from the balcony of the Homestead at Belltrees, Upper Hunter River, New South Wales.

FROM A PHOTO. BY SID. W. JACKSON.

and the Cockatoo-Parrakeets (*Calopsittacus novæ-hollandiæ*). Mr. White accounted for the unusual presence of the latter by the supposition that the drought existing at the time had driven the birds from the western localities to seek more favourable grounds on the coast-line. Not far from here I made an interesting find. Looking across the river I saw a Black-shouldered Kite sitting near a nest in a large river oak; the nest, however, looked more like that of the Whistling Eagle than anything else, and on closer examination so it turned out to be. Here I also saw a Wedge-tailed Eagle and a Whistling Eagle soaring above me. Travelling further on, I crossed the river again, and climbed a pyramidal hill, from which a very remarkable view was to be had, and from this point of vantage I took three large panoramic photographs of the Belltrees homestead and its surroundings. It really was a fine look-out, and to me was a place full of charm, for, perched up aloft, above the rest of the landscape, I could yet hear quite plainly, and distinguish as easily, the notes of the birds in the trees on the flats and river banks below. I picked out from the pleasant babel of sound the notes of the Friar-Bird or Leatherhead, Rufous-breasted Thickhead (*Pachycephala rufiventris*), Pallid Cuckoo, Bronze-Cuckoo (*Chalcococcyx plamosus*), Whistling Eagle, White Cockatoo, Leach Black Cockatoo (*Calyptorhynchus viridis*), Babbler, Oriole, Grey Shrike-Thrush, Striped Honey-eater (*Plectrorhynchus lanceolatus*), Red Wattle-Bird (*Acanthochæra carunculata*), Noisy Miner, Superb Blue Wren (*Malurus cyaneus*), Laughing Jackass, Wood-Swallows, Sacred Kingfisher, Grey Butcher-Bird (*Cracticus destructor*), Peaceful Dove, Bronze-wing Pigeon, Pied Grallina or Magpie-Lark, Magpie, Reed-Warbler, Cockatoo-Parrakeet, and many others.

One fine feature of the magnificent landscape spread out before me was the towering bulk of Mount Woolooma in the middle distance. This noble-looking hill, which runs up to 5,000 feet above sea level, is shown in the accompanying photograph, and is a veritable nursery of nature, and full of objects of interest to the naturalist. Amongst other things it is noteworthy that on its top there grows a species of eucalyptus which, so far, has not been recorded as being found in any other part of the Australian continent, though it has been met with in Tasmania. The western slope is thickly timbered, carrying heavy scrub in parts, in which the Powerful Owl (*Ninox strenua*), Brush-Turkey (*Catheturus lathamii*), flying fox, &c., live in comparatively undisturbed security, whilst round the foot of the mountain kangaroos and wallabies enjoy similar privacy, and are consequently somewhat plentiful. In fact, Belltrees proved to be the home for the bird-lover, and prior to my return to Sydney a visit to Ellerston, another part of the estate, disclosed similar

conditions. Ellerston is situated about twenty miles further up the river, the homestead, which is occupied by Mr. Cobb, the manager, lying north-west of the Mount Royal Range. Here, too, I found the same profusion of bird-life, especially along the well-timbered banks of Page's Creek and the Upper Hunter River. Here these streams became very narrow. Many of the nests which I discovered were as yet only half built, but, amongst others which I was fortunate in securing, was a very fine clutch of four eggs of the Spur-winged Plover (*Lobivanellus lobatus*) on a stony ridge close to the junction of the two streams. The handsome Red-shouldered Parrakeet was frequently to be seen feeding on the ground under the shade of the graceful river oaks, and added its brilliant colour and striking beauty to what must always be a lovely scene. I was surprised to learn from Mr. White that the wombat is still plentiful in the bush about Ellerston. On this station there is also a suspension bridge across the river, and a very substantial one it is. Considering the kindness and hospitality extended to me during my stay at Belltrees and Ellerston, and the interesting phases of bird, animal, and insect life which presented themselves, it is not to be wondered at that the whole of the trip, with its intimate suggestion of memories of the illustrious Gould, made an impression on my memory that will not be easily effaced.

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### Cormorants in Relation to Fishes.

BY A. H. E. MATTINGLEY, C.M.Z.S., &c.

FOR the last 17 years I have roamed throughout many parts of the Commonwealth, and have come in contact with Cormorants in many places and under diversified conditions, and have for several years past made a special study of their nidification, particularly in the vast areas of the River Murray swamps and billabongs and on certain lakes where these birds are now found nesting in hundreds, but formerly they were to be counted in their "shaggeries" in thousands. Owing, however, to their ruthless destruction by persons seized with the idea that they were benefiting the fishing industry by destroying the "Shags," as they term them, they are at present but a tithe of their former numbers. Fishermen and anglers have of recent years complained bitterly of the scarcity of fish, and, as is natural, have blamed the weakest creature, and one incapable of defence—blame all but ourselves; it is human nature to do so. They have not, however, amongst other causes, attributed the short-sighted policy of the wholesale destruction of the Cormorants for part of the decrease in our fish supply, but, nevertheless, such is undoubtedly a fact. In this paper I hope to be able to demonstrate that such is the case. Most of our fresh-water fishes spawn

in places where there is some cover or protection for their ova, which is usually deposited amongst the vegetation in swamps or backwaters where there is a gentle current flowing, or rather filtering through, or in streams amongst the water-weed and other aquatic growths that prevent it being swept away into the swifter parts of the current, and also the ova is placed under logs and stones. On account of the immobility of the ova it is readily preyed upon from below by many kinds of crustacea, such as yabbies, whilst turtles, eels, and other fishes dispose of vast quantities of it, as well as myriads of the small and almost helpless fish fry. Statistics collected by expert pisciculturists and ichthyologists indicate an astounding mortality amongst the fish ova and fish fry, to an extent almost incredible. The small number of fish that arrive at maturity is out of all proportion to the number of ova deposited. This dire mortality is due to the enemies of the ova and fry, and if the enemies are not held in check then there is a serious diminution in the available supply of mature fish. To destroy those creatures that prey upon the enemies of the fish ova and fry is tantamount to destroying the fish themselves, and in the destruction of the Cormorants this procedure is exemplified. To destroy the balance of nature in one direction is merely setting up an evil in another place, and we should be sure of our attitude towards a particular animal or plant ere the consequences of our act recoil unpleasantly on us. The destruction of the Cormorants is an example of this contention—neither ethical nor sentimental regard for birds sways my judgment in this. We must also remember that Cormorants are limited in numbers by the law of nature and do not increase beyond that limit, and we are therefore able to gauge their effect on our fish supply. Cormorants have their natural enemies just the same as other birds and animals, and their increase above the normal number is consequently checked. When approached closely the Shags that build on the reefs and rocky islets in the ocean take fright and fly away, and should there be any Silver Gulls (*Larus novæ-hollandiæ*) and Skuas about the Shags' departure is immediately followed by an invasion of these birds, and it is indeed a sight to see them swoop down upon the Shags' nests and demolish both eggs and young birds. The Gulls smash the eggs by dropping them on the rocks, after which they eat the contents. The Cormorants that nest in inland waters also have their enemies, and it is a fact that a Whistling Eagle's (*Haliastur*) nest is usually found overlooking their rookeries. Special observations made by me at the Cormorant rookeries, situate on inland waters, show that they feed their young almost entirely on yabbies, frogs, shrimps, and young turtles. One must remember that at this period the swamps, particularly in the Murray River basin, the greatest waterway in Australia, are

annually inundated, and what is dry land for part of the year is then covered with water. It is at this period that the large and mature fishes retire from the main stream and deposit their ova amongst the aquatic vegetation of the swamps. Crustacea of many kinds repair also to the swamps at this time, and prey upon the ova and minute fry in an appalling manner, billions of either fishes' eggs or young fishes disappearing into their hungry maws; turtles, likewise, lay their eggs in the sand adjacent to the swamps, so that their young, when hatched out by the solar heat, can readily find their way to them and banquet upon the tremendous supply of fish eggs and fry. It is precisely at this period that some species of Cormorants—viz., *Phalacrocorax melanoleucus*, *P. sulcirostris*, *P. carbo*, and *Plotus novæ-hollandiæ*—nest together in rookeries in these swamps, well knowing that an abundant harvest of crustacea is to be reaped from them at this time. The knowledge of this fact is a necessity to them, since their energies are taxed to their utmost to satisfy the voracious appetites of their young ones. At this period there are no fish of suitable size, such as are commonly captured by Cormorants, to be found in the swamps, with very few exceptions only the large spawning adults being found. It is obvious that destruction of fish by Cormorants in these localities does not occur at the nesting period, Cormorants disdaining the capture of the small fry when there is a plenteous supply of larger-sized and more readily captured slow-moving forms of life suitable as food for their young ones. Hence the Cormorants at this period allow more fish to be hatched out than is eaten by the adult birds throughout the balance of the year when they prey upon them in their more advanced stages of growth, and when they have a better chance to escape. It is during the nesting period that Cormorants and their young are destroyed wholesale, owing to their being more easily approached at this time—a time at which their usefulness is greatest. If you notice a Cormorant diving after a shoal of fish in a river or in the sea you will observe that he reappears many times without having achieved success. The number of times he dives is out of proportion to the number of fish caught, probably once in six tries being a fair average. This shows that, being a bird, the Cormorant is not equal to a fish in its own domain, and that only the weakest and physically unfit fish are caught—fish that probably would not be competent to propagate their species, or if they did so would beget a decadent stock. A question simply of the survival of the fittest. The Cormorant is one of those aids to nature by which her balance is kept level as regards the fishes. Cormorants have, therefore, been evolved by nature for the special work of eliminating those fishes which are unfit to live, and which are unnecessary in her economy. Other aids are utilized by nature



to keep certain species of fishes from increasing in number beyond a proper limit, and so other fishes have been ordained to destroy more of their brethren than the Cormorants do. Were statistics collected showing the number of fish destroyed in other ways beside being eaten by Cormorants the number tabulated against these birds would be insignificant. Do not "muzzle the ox that treadeth out the corn" is an old-time proverb, and one universally admitted to be correct. Why, then, muzzle the Cormorants after they have destroyed such vast numbers of the enemies of fishes? Cormorants are but safety-valves in the boilers of nature. Why do not our anglers utilize the Cormorants like the Chinese, who train these birds to fish for them? The method adopted is to capture the birds when young, so as to accustom them to handling, and then they are taken out in the boat with experienced adult birds, which teach them how to catch fish, and after the younger birds have become expert fishers the Chinaman slips a rubber ring over the Cormorant's neck to prevent the bird swallowing the fish when it captures it, and when it finds it cannot do so it returns to the boat and allows its keeper to abstract the fish from its beak.

Erroneous ideas are rife as to the quantity of fish that a Cormorant can consume. Some persons assert that these birds eat as much as 10 lbs. of fish daily. However, when their assertion is investigated it is found to be only conjecture. The digestive power of a Cormorant is regulated by the bird's size, and the quantity of food demolished at one meal by the different species varies according to the size of their gullet, which limits their capacity for swallowing, being greater in the larger species than in the smaller. The species that are numerically strongest here are *P. sulcirostris* and *P. melanoleucus*. The weight of the bodies of these species is between 2½ and 3 lbs., and it is questionable whether they are able to eat their own weight of fish daily. Their digestive organs, which are but a small part of the mechanism of the bird, can only cope with a given quantity of material—certainly not more than 1½ lbs. weight. On several occasions I have observed Cormorants catching eels, and in one instance a bird was observed, early in the morning, sitting on a log with a length of eel hanging out of its mouth. To prevent it slipping out of its gullet the bird had to keep its head up in the air. It had swallowed the eel head first, a customary method adopted when swallowing a fish. It was waiting for the fish to be digested, and when passing the same spot later on, in the afternoon, part of the fish was discerned projecting from its beak, and it would have been dusk ere the bird had finally swallowed its prey, whilst the process of digestion would have still proceeded during the night.

It is not generally known, but nevertheless it is a fact, that the

squabs or nestlings of Cormorants are excellent eating, and in slaying them we are simply throwing away part of our food supply. Why the squabs of Cormorants are so edible is due to the sweet-fleshed food with which they are fed by their parents, which, as before stated, consists of crustacea, &c. We must also remember that before the advent of the white man in Australia Cormorants preyed upon our fishes, and there was no serious diminution in the fish supply. The fishes were then as plentiful as they ought to have been, and were in the correct quantity so far as the law of nature allowed. White men, in their ignorance, have taken from our waters more fishes than Nature could stand, or have destroyed their spawning grounds by draining them, or have deposited noxious materials into or on to them, or have rooted them up with nets, and have as ignorantly expected Mother Nature to replace them as formerly. But there is a limit, as I have before mentioned, to the reserve fertility of Dame Nature, which, if overstepped, leads to serious trouble in the shape of want of balance. Therefore, see to it that her balance is kept level, and by restocking our waters with those varieties of fishes which we are continually abstracting from them, prevent the undue displacement of Nature's balance. My remarks so far have been applicable to the inland-breeding Cormorants, that nest principally in trees. The following notes apply equally to both the inland-breeding forms as well as the sea and rock-nesting Cormorants, such as *Phalacrocorax gouldi* and *P. hypoleucus*. I have watched Cormorants at sea and in our bays and estuaries apparently following up shoals of fish fry, but never was I able to discern them devouring the fry, which, owing to the insufficiency of their size, are not satisfying enough to them. I have often observed them capturing the voracious predatory fishes which were following up the shoals of fish fry and destroying thousands upon thousands of immature fish. So, after all, we find that in this instance the Cormorants were again allowing more fish to remain alive than the fishes preying upon the shoal of fish fry would have done had these cannibals not been destroyed by the Cormorants. It is therefore safe to assume that the ratio of the fish in the shoal that would have been destroyed, but which had been given their lives by the action of Cormorants in killing their enemies, would be in the proportion of several thousands to one. Then, again, Cormorants destroy large quantities of eels in our estuaries and streams, especially when there is an eel fare or migration of eels from the sea to the rivers, and it is universally conceded that eels are very destructive to fish ova. Here, again, we have another instance of the benefit the sea Cormorants are to us. They attack the enemies of our fresh-water fishes' ova at the threshold of the onslaught on their habitats. Cormorants prefer non-spinous fish for food, such as eels, on account of their freedom

from sharp spines. Another good point regarding them is that they love to capture the succulent but non-sporting lamprey, that enemy to some of our best fishes, especially the fresh-water varieties, such as the Murray "cod" and blackfish. The lamprey is an eel-like fish which is provided with a suctorial mouth devoid of teeth, with which it is able to attach itself to a fish, and by rotating its harsh tongue it makes a hole in the skin of a fish, through which it sucks out its life's-blood. Lampreys are more plentiful than is generally supposed, and are called eels by persons unacquainted with their structure. It is not an uncommon error for such persons to make when they announce that they had captured eels in the River Murray, in which stream none, up to the present, have been found to exist. The great fighting capacity of a trout constitutes the chief pleasure to fly-fishermen, and if these fish lost this characteristic trout-fishing would lose most of its charms, and would be but a mediocre sport. If the weaklings of the trout were allowed to propagate their species these fish would become decadent, and would eventually evolve into sluggish and slow-moving creatures if their natural enemies, which eliminate the least fit to live, were destroyed. It is simply the application of the well-known law of disuse inheritance causing deterioration and atrophy in the structure. This is instanced in the flightless, inactive birds of New Zealand, which for centuries past, on account of having no ground enemies to cause them to fly up off the ground out of danger, have gradually lost the power of flight, and have become decadent, and are thus consequently disappearing, never to return. In our wisdom, therefore, let us prevent, as far as we can, the decadence of our fishes, allowing nature to use its aids to this desirable end, and by so doing the now despised and outcast Cormorants will be relegated to their proper sphere of usefulness.

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## Observations on the Finch as Foster-Parent to the Cuckoo.

BY C. F. COLE, MELBOURNE.

AT a recent meeting of the Bird Observers' Club one of the members mentioned that he had on several occasions last season found young Cuckoos dead in the nests of the Red-browed Finch (*Ægitha temporalis*), and wished to know if any other member could throw any light upon the subject, and whether it were possible that the Finches, upon finding they had brought forth strange progeny, had poisoned them by giving them some special food.\* This theory carries no weight

\* T. H. Tregallas, *Emu*, vol. vii., p. 187.

whatever with me, because, as far as my observations go, the Finch cannot act as foster-parent to the Cuckoo. Either the Finches deserted their nests, or the young Cuckoos died of starvation, partly brought about by opposite methods of feeding and food. The Finches being granivorous in their habits, the food which they collect for their young is taken either into the throat or crop, and after being softened, most probably by the salivary glands of the crop, is ejected back into their bills and then into the mouth of their young. On examining this food I find it to be very similar to fine boiled oatmeal, and consisting chiefly of grass and other small seeds that have been shelled, the bill of the Finch being adapted for this purpose. It is a recognized fact amongst naturalists that the first food the Finch family feed their young upon is insects. This may be so, but I have proved beyond doubt that insect life is not essential to the rearing of young Finches, having seen Spotted-sided (*Steganopleura guttata*), the European Goldfinch, and others reared in captivity upon nothing but plain canary seed. Upon examining young Finches in their early stage I have always found their crops to contain this assimilated food. Amongst native Finches my observations are based chiefly upon the Red-browed and Spotted-sided, whose nests were to be found in scores in the citrus trees growing in an orchard in the Ovens Valley (Victoria), and with the acclimatized European Goldfinch at Upper Hawthorn, Melbourne. Having upon several occasions found the egg of the Pallid Cuckoo (*Cuculus pallidus*) deposited in that of the Goldfinch, I never had the opportunity of proving my theory, on account of the Goldfinch always deserting her nest upon finding the strange egg placed therein, until last November twelvemonths, when I found a Finch's nest situated low down in a pear-tree in the orchard, and containing three Finch's eggs and a Pallid Cuckoo's. On examining them I came to the conclusion that they would soon be hatched. This surmise proved to be correct. On the fourth day from finding the nest, at noon, all four young birds had hatched. I knew that the Cuckoo would eventually get rid of his nest-companions, either by ejecting them—the commoner method in vogue amongst these strange birds—or else by trampling them to death. This trampling to death business, as far as my observations go, is that the Cuckoo finds it easier work to get rid of the stronger than the weaker nestlings, my reasons being these:—Young birds in the nest always strive for the top position, which naturally falls to the stronger. With the young Cuckoos it is the reverse; they work to get beneath, and as a rule there is no trouble, the other young birds readily making way, thus playing into the hands of their murderer nest-mate, who, getting them into the hollow between its shoulders, easily casts them out to destruction. I have on rare occasions found the Cuckoo to quickly sit upon

and by its greater strength smother and crush the life out of weak or sickly nestlings. One can easily prove how readily the young birds in a nest make way by simply placing the finger in the nest and gently working it downwards beneath them, this action at once causing them to make for the uppermost position. The second day from hatching the Cuckoo had got rid of its three nest-companions; their carcasses I found upon the ground being devoured by scores of small ants. The Cuckoo up till this stage looked both well and strong, but, knowing that warmth was more essential than food up to this period, it was hard to say if the Cuckoo had received any food or not, because the food of insectivorous birds passes into the stomach, and maceration takes place in the œsophagus or gullet before entering the stomach. In granivorous birds the maceration takes place in the crop or dilated gullet above the breast-bone, and then passes into the gizzard, dissection being the only way to prove if the Cuckoo had received any food or not. Knowing that young insectivorous birds require to be fed more often than those of granivorous ones, I wondered if the Finches would exert themselves more on account of the voracious appetite of their foster-chick, which could easily consume more than the three young Finches put together. It was now purely a matter of time, so, visiting the nest occasionally, I found at the end of the third day that the inmate looked "seedy," and upon looking into the nest on the morning of the fourth day I found it dead. Upon dissecting this young Cuckoo I found the organs in a wasted condition and the body devoid of any fatty substance, proving beyond doubt that death was due to starvation. The stomach had very little food in it, this being similar to that described in the beginning of this paper, but not enough to sustain life in so voracious a bird as the Cuckoo, and, besides, not being the class of food necessary to rear a Cuckoo. In concluding, I can only say that it was with delight that I heard Mr. Tregallas state that he had found the dead bodies of young Cuckoos in the nests of the Red-browed Finch, and I await with eagerness the time when some other observer will bring forth a note proving or disproving the ability of the Finch family to act as foster-parents successfully.

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CARD.—Mr. George R. Marriner, F.R.M.S., wishes to inform his correspondents that he has resigned the position of Assistant in Biology at Canterbury College, Christchurch, in order to take up the Curatorship of the Public Museum, Wanganui, New Zealand, and will be pleased in future to receive and exchange pamphlets on Natural History at his new address.

## Bird Notes from Marong (Bendigo District) from 1904 to 1907.

BY H. W. FORD.

1904.

May.—*Pomatorhinus superciliosus* (Babbler) and *Myzantha garrula* (Miner) were nest-building. I got young Miners in June.

1905.

March 23 and 24.—*Chætura caudacuta* (Spine-tailed Swifts) going north.

April 5 and 12.—*Acanthochæra carunculata* (Wattled Honey-eater, Red Wattle or Gill-Bird) in flocks, going north.

April 12 and 13.—*Ptilotis leucotis* (White-eared Honey-eater) in flocks, going north; May 1, 3, and 5, going east; July 18, going south.

July 23.—First *Cuculus pallidus* (Pallid Cuckoo) heard; August 8, second heard.

August 11 and 15.—Plenty Cuckoos about—*Cuculus pallidus* (Pallid) and *Chalcococcyx plagusus* (Bronze).

August 3.—*Zonifer tricolor* (Black-breasted Plover) sitting on four eggs about a week.

August 20.—First *Rhipidura albiscapa* (White-shafted Fantail) seen; August 26, second seen; September 15, third seen.

August 20.—*Staganopleura guttata* (Spotted-sided Finch) seen in two flocks of nine and twelve respectively.

August 21.—*Zosterops cærulescens* (Zosterops or White-eye) seen.

August 26.—*Pardalotus assimilis* (Pardalotes or Diamond-Birds; Wit-oo, local name) seen.

August 15 and 28.—A pair of *Ephthianura albifrons* (White-fronted Chat; local name, Tang) seen.

September 1 and 16.—Flocks of *Graucalus melanops* (Summer-Bird, Cuckoo-Shrike), a slate-coloured bird with black head, about as big as Pallid Cuckoo.

September 9.—*Petrochelidon ariel* (Fairy Martin), a flock seen.

September 16.—Flock of *Carphibis spinicollis* (Straw-necked Ibis) going south.

September 15.—*Burhinus grallarius* (Curlew, Stone-Plover's) nest, two eggs.

September 18.—Pair *Ægialitis ruficapilla* (Red-capped Dottrel) seen.

September 22.—*Artamus sordidus* (Wood-Swallow), flock seen.

October 5 and 6.—*Artamus personatus* (Masked Wood-Swallows), very high, going south, at 1 p.m. and 11 a.m.

October 22.—*Ephthianura albifrons* (White-fronted Chat, Tang), a flock.

October 26.—Flock of *Graucalus melanops* (Summer-Bird, Cuckoo-Shrike), going south.

October 26.—*Rhipidura albiscapa* (White-shafted Fantail) seen.

October 27.—*Ephthianura albifrons* (White-fronted Chats, Tangs) going south.

- October 10.—First *Cinchorhamphus cruralis* (Brown Song-Lark).  
October 10.—First *Calopsittacus novæ-hollandiæ* (Cockatoo-Parrakeets), going north.  
October 14 and 16.—*Artamus sordidus* (Wood-Swallows) about, plenty ; none after till 9/11/05.  
October 16.—Second *Calopsittacus novæ-hollandiæ* (Cockatoo-Parrakeets), going north.  
November 2.—*Melopsittacus undulatus* (Warbling Grass-Parrakeet) going north.  
November 6.—*Cacatua gymnopsis* (Corellas, small), going south.  
November 6.—*Melopsittacus undulatus* (Warbling Grass-Parrakeet), going south-west.  
November 4.—*Calopsittacus novæ-hollandiæ* (Cockatoo-Parrakeets) going south-west.  
November 16.—*Artamus personatus* (Wood-Swallows) going north.  
December 1 and 2.—*Carphibis spinicollis* (Straw-necked Ibis), seven flocks going north.  
December 1.—*Acanthiza* — ? (Grey Tit's) nest, three eggs.  
April 23.—Two *Ægialitis melanops* (Black-fronted Dottrel) at mine dam at 7 a.m. ; not there in evening.

## 1906.

- February 22.—*Chaetura caudacuta* (Spine-tailed Swift), flock going north ; March 1, going north-east and hawking ; March 6 and 7, going north ; January 26, 1907, flock going north-west and hawking ; February 1, 1907, scattered birds going north-east at 7.30 p.m. ; February 6, 1907, two birds at 7 p.m., ten minutes between or interval, going north-east. *Note*.—I never saw Swifts going south, and up to end March, 1908, I had not seen any going north since 6/2/07.  
April 21.—*Acanthochæra carunculata* (Red Wattle-Bird) going north ; April 23, going west and north ; April 24 and 27, going north-west.  
April 21.—*Myzantha garrula* (Miner's) nest, two young, week old ; July 10, building.  
July 14.—*Acanthochæra carunculata* (Red Wattle or Gill-Bird).  
July 16.—*Pardalotus assimilis* (Pardalote) seen.  
July 18.—First *Chalcococcyx plagosus* (Bronze-Cuckoo) seen.  
July 24.—First *Cuculus pallidus* (Pallid Cuckoo) seen.  
July 24.—*Gymnorhina leuconota* (White-backed Magpie) breaking sticks off dry sapling and taking to nest-building ; seen doing it three times. Ground was very wet, and all sticks on it sodden.  
July 30.—Second *Cuculus pallidus* (Pallid Cuckoo) seen ; July 31, third seen.  
August 1.—Second *Chalcococcyx plagosus* (Bronze-Cuckoo) seen.  
August 1.—*Myzantha garrula* (Miner) sitting, eggs.  
August 2.—*Chalcococcyx plagosus* (Bronze) and *Cuculus pallidus* (Pallid) Cuckoos about.  
August 3.—*Zonifer tricolor* (Black-breasted Plover) sitting on four eggs ; just started to sit.

- August 3.—Pair *Ephthianura albifrons* (White-fronted Chats); August 7 and 8, plenty Chats about.
- August 9.—*Pomatorhinus superciliosus* (Babbler's) nest, one egg.
- August 9.—*Myzantha garrula* (Miner, Soldier-Birds') nests, eggs, building, and young; three nests.
- August 10.—*Anthus australis* (Ground-Lark's, common brown) nest, three eggs.
- August 10.—*Myzantha garrula* (Miner's) nest, eggs.
- August 11.—*Acanthiza chrysorrhoa* (Yellow-rumped Tit's) nest, small young; August 12, building.
- August 12.—*Pomatorhinus superciliosus* (Babbler's) nest, six eggs.
- August 16.—*Petrochelidon ariel* (Fairy Martins) flock, and nesting in old shaft.
- August 20 and 21.—Pair *Ægialitis melanops* (Black-fronted Dottrel) at mine dam; gone on 22nd.
- August 28.—*Rhipidura albiscapa* (White-shafted Fantail) seen.
- August 28.—Pair (first) of *Artamus sordidus* (Wood-Swallows).
- September 14.—*Rhipidura albiscapa* (White-shafted Fantail) seen.
- September 21.—*Psephotus hæmatonotus* (Red-backed Parrakeet) sitting.
- September 21.—*Platycercus eximius* (Rosella), large young ones in nest.
- September 26.—*Philemon corniculatus* (Leatherhead) going south.
- September 28.—*Artamus sordidus* (Wood-Swallows) about bush.
- October 2.—*Pomatorhinus temporalis* (small Babbler,\* Bush Chat-terer's) nest, new; October 5, two eggs in nest.
- October 5.—*Staganopleura guttata* (Spotted-sided Finch) seen.
- October 6.—*Calopsittacus novæ-hollandiæ* (Cockatoo-Parrakeets) going north-west.
- October 11 and 13.—*Graucalus melanops* (Summer-Birds, Cuckoo-Shrikes) about.
- October 14.—*Artamus sordidus* (Wood-Swallows) nesting; sitting.
- October 17.—*Rhipidura tricolor* (Willie Wagtail, Black-and-White Fantail's) nest; young, about four days old.
- October 20.—*Halcyon sanctus* (Sacred Halcyon) seen.
- October 22.—Flock *Calopsittacus novæ-hollandiæ* (Cockatoo-Parrakeets) going north-west.
- October 22.—*Artamus sordidus* (Wood-Swallows) building.
- October 22.—*Notophox novæ-hollandiæ* (White-fronted Heron, Blue Crane) sitting.
- October 23.—Flocks *Calopsittacus novæ-hollandiæ* (Cockatoo-Parrakeets) going north-west; October 24 and 25, few going north-west.
- October 25.—*Staganopleura guttata* (Spotted-sided Finch) building under White-fronted Heron's nest.
- October 25.—*Grallina picata* (Peewit or Magpie-Lark's) nest in same tree as Heron's and Finch's; sitting.

\* The smaller Babbler is *P. superciliosus*. If the prior-mentioned Babblers are intended for the larger species they should be *P. temporalis*.—EDS.



- November 25.—Pair of *Hieracidea orientalis* (Brown Hawk's) large nest in high tree; sitting.
- November 27.—Flocks *Calopsittacus nova-hollandiæ* (Cockatoo-Parrakeets) going south. To be seen about every day after 27/10/06.
- November 2.—*Hieracidea orientalis* (Brown Hawks) evidently have young in nest.
- November 5.—*Myzantha garrula* (Miner's) nest; young ones.
- November 12 and 18.—*Melopsittacus undulatus* (Warbling Grass-Parrakeet) in flocks.
- November 21.—*Rhipidura tricolor* (Black-and-White Fantail), four eggs just laid in nest that had three young in on 17/10/06, and which left nest in due course.
- November 21.—*Artamus sordidus* (Wood-Swallow's) nest; two young in. This nest was building on 22/10/06.
- November 30.—*Ephthianura albifrons* (White-fronted Chat's) nest; two eggs.
- December 1.—Young *Burhinus grallarius* (Curlew, Stone-Plover), a week old, seen.
- December 5.—First *Merops ornatus* (Bee-eater) seen.
- December 5.—*Cacatua roseicapilla* (Galah) feeding young in nest; nest seen four weeks ago.
- December 13.—Flock black and white Ibis going south.
- December 21.—*Cerchneis cenchroides* (Kestrel), feeding young in hollow tree.

1907.

- January 26.—*Chætura caudacuta* (Spine-tailed Swifts) going north-west and hawking; February 1st, scattered, going north-east, at 7.30 p.m.; February 6, two, at 10-minute interval, going north-east, at 7 p.m.
- March 14.—*Ephthianura albifrons* (White-fronted Chat) about in hundreds; never left all the year after.
- April 12.—*Acanthochæra carunculata* (Red Wattle-Birds) going north-east.
- April 12.—*Calopsittacus nova-hollandiæ* (Cockatoo-Parrakeets) about in flocks. They never left the district this year; a very dry or droughty year. Last year they all left on or about 28th February, after heavy rain. They were about in thousands before the rain, and were all gone two days after. *Ephthianura albifrons* (Chats) stopped in 1907 also.
- April 29.—*Petræca goodenovii* (Red-capped Robin) seen.
- April 30.—First *Petræca phænicea* (Flame-breasted Robin) seen; May 3, second seen.
- May 30.—Three male birds and plenty females; *Petræca leggii* (Scarlet-breasted Robins) also seen.
- May 12.—*Chalcococcyx plagosus* (Bronze-Cuckoo) in garden; flew away north.
- May 13, 14, and 15.—Large flocks *Acanthochæra carunculata* (Wattle-Bird) going south.

- May 14 and 15.—*Calopsittacus novæ-hollandiæ* (Cockatoo-Parrakeets) looking for spouts for nesting.
- May 13.—Male *Pachycephala gutturalis* (Thickhead) seen.
- June 14.—*Pomatorhinus superciliosus* (Babblers) mating.
- June 19.—*Petræca goodenovii* and *P. leggii* about; plenty of latter; cold, windy day.
- July 26.—First *Cuculus pallidus* (Pallid Cuckoo) seen; August 30, second seen; August 31, third seen; September 1, plenty about.
- August 2.—*Corone australis* (Raven) sitting, also *Gymnorhina tibicen* and *leuconota* (Magpies).
- August 2.—*Staganopleura guttata* (Spotted-sided Finch) seen.
- September 2.—*Myzantha garrula* (Miner's) nest; three eggs.
- September 7.—*Ptilotis leucotis* (White-eared Honey-eaters) about; nests and young.
- September 8.—First *Cinclorhamphus cruralis* (Brown Song-Lark); September 9, several about.
- September 9.—*Artamus sordidus* (Wood-Swallows) about bush; white wing marked.
- September 9.—*Acanthochæra carunculata* (Red Wattle-Bird) about bush.
- September 12.—*Cerchneis cenchroides* (Kestrel) mating. September 26, second pair sitting; young left nest 5/12/07. The food seems to be mice and grasshoppers, and once I saw a Stubble Quail with Hawk; in another case a Sparrow had been killed.
- September 13.—First *Rhipidura albiscapa* (White-shafted Fantail) seen; September 17, second seen.
- September 16, 21, and 22.—Flocks *Artamus personatus* (Masked Wood-Swallow) flying high, going south.
- September 16.—Pair of *Glossopsittacus porphyrocephalus* (Purple-crowned Lorikeet) looking in spouts of trees for nest.
- September 23.—*Graucalus melanops* (Summer-Bird, Black-faced Cuckoo-Shrike) seen.
- September 26.—*Artamus personatus* (Masked Wood-Swallows) at 7.30 a.m. on trees and stumps, working south.
- September 26.—*Psephotus hæmatorrhous* (Blue Bonnet or Bull-oak Parrakeet, Crimson-bellied Parrakeet) sitting.
- September 30.—*Ephthianura albifrons* (White-fronted Chat), young about; nests with young and eggs; October 9 and 10, Chats' nests, two and three eggs.
- October 12.—*Artamus personatus* (Masked Wood-Swallow) in flocks, going north.
- October 14.—*Chalcococcyx plagosus* (Bronze-Cuckoo) heard.
- October 17 and 18.—*Artamus personatus* (Masked Wood-Swallows) going north against strong north wind.
- October 1 to 18.—*Pardalotus assimilis* (Pardalote) nesting.
- October 21, 22, and 23.—*Artamus personatus* (Masked Wood-Swallow) in thousands going south-west, and about paddocks on ground. All gone after 23/10/07.

- October 26.—*Halcyon pyrrhopygius* (Red-backed Kingfisher) seen going south. This is first bird of kind I have seen.
- October 27, 29, and 30.—*Artamus personatus* (Masked Wood-Swallows) flying high, going west.

## ADDENDA.

I never saw the Swifts going south, or in 1908 going north. I might have been out of track, as I was six miles further west in 1908.

*Psephotus hæmatorrhous* (Crimson-bellied Parrakeet, locally called the "Bull-oak" Parrot, and further north the "Blue Bonnet"), mentioned in former notes as sitting on 26th September, 1907, is rather a rare Parrot about here. I do not think I have seen more than 20 birds in four years. In October, 1904, saw a pair feeding large young in nest in tree spout.

*Hieracidea orientalis* (Brown Hawk).—These birds when sitting take turn about on eggs, at about 3-hour intervals. Sometimes the male bird brings food to the hen. She can see him a long way off, and screams till he is near, when she flies to him and takes food from his claws with her own. She then settles on a tree and eats food, and goes off on her spell, and he goes on nest. After young were out he used often to bring frilled lizards in his claws. She would do as above stated, but would tear up lizard and swallow, and then feed it to the young. Once he seemed to have more lizard than was wanted, which he took and left on an old nest 100 yards away from nest with young, and went off on his rounds, but when he came back he took the lizard he left on old nest. These Hawks do not appear to prey on birds—birds not being scared of them—and a Willie Wagtail (Black-and-White Fantail) used to chase and peck at Hawk for a distance of half a mile. Hawk never molested the Willie.

The *Grallina picata* (Magpie-Larks) take spells at sitting on eggs at 20 to 30-minute intervals. When a bird has had its spell it flies up and stands beside nest; other gets off and flies away, and former takes its place. This is done all day.

*Notophox novæ-hollandiæ* (White-fronted Heron).—These birds take spells at sitting at about 6-hour intervals. They used to change about 9 a.m. and 3 p.m. When we were near the nest the returning bird would light in nest tree or next one, and give a croak; other would get up and fly away, the relieving bird then going to nest. We left before the young came out, so could not observe the actions then. They had five young reared, I saw afterwards.

A Spotted-sided Finch built right under this Heron's nest while the Heron was sitting. There were three Spotted-sided Finches' nests, one Magpie-Lark's, and the Heron's in one tree—a yellow box.

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FOSTER-PARENTS OF CUCKOOS.—Mr. Lawson Whitlock (W.A.) has forwarded me *Chalcococcyx plagosus* with *Acanthisa pallida* (2) and *A. inornata* (2) respectively, and *Cuculus pallidus* with *Myzantha obscura* (1). I think these foster-parents have not been previously recorded.—H. L. WHITE. Scone, N.S.W.

## List of Birds Observed in the Wilmot District, North-West Tasmania.

BY (MISS) J. A. FLETCHER, CLEVELAND (TAS.)

THE district is heavily timbered, mountainous, and the winters are long, cold, and very wet. Snowfalls occasionally occur in the township, which is 800 feet above sea level and 26 miles inland. A few miles to the south the altitude of the country rises rapidly, and snow often lies thick for days.

The above remarks will serve to show the probable reason of the absence of several of Tasmania's common birds.

- Circus gouldi* (Swamp-Hawk).—Occasional resident.  
*Accipiter cirrhocephalus* (Sparrow-Hawk).—Plentiful.  
*Astur novæ-hollandiæ* (White Goshawk).—Very rare.  
*Uroaëtus audax* (Wedge-tailed Eagle).—Rare.  
*Falco melanogenys* (Black-cheeked Falcon).—Fairly common; nested.  
*Hieracidea berigora* (Brown Hawk).—Common.  
*Ninox maculata* (Spotted Owl).—Plentiful.  
*Corvus coronoides* (Crow). \*—Not very common.  
*Strepera arguta* (Hill Crow-Shrike).—An occasional visitor in autumn.  
*Strepera fuliginosa* (Sooty Crow-Shrike).—Plentiful.  
*Collyriocinclá rectirostris* (Whistling Shrike-Thrush).—Numerous.  
*Graucalus parvirostris* (Small-billed Cuckoo-Shrike).—Summer visitant.  
*Rhipidura diemenensis* (Dusky Fantail).—Plentiful.  
*Myiagra nitida* (Satin Flycatcher).—Occasional.  
*Petræca leggii* (Scarlet-breasted Robin).—Plentiful.  
*Petræca phænicea* (Flame-breasted Robin).—Plentiful.  
*Petræca rhodinogastra* (Pink-breasted Robin).—Plentiful in fern gullies.  
*Amaurodryas (Petræca) vittata* (Dusky Robin).—Numerous.  
*Malurus gouldi* (Long-tailed Blue Wren).—Numerous.  
*Geocichla macrorhyncha* (Mountain-Thrush).—Becoming rare.  
*Stipiturus malachurus* (Emu-Wren).—Rather uncommon.  
*Megalurus gramineus* (Grass-Bird).—Uncommon.  
*Acanthiza chrysoorrhoa* (Yellow-rumped Tit).—Common.  
*Acanthiza diemenensis* (Tasmanian Tit).—Common.  
*Sericornis humilis* (Brown Scrub-Wren).—Rather numerous.  
*Cinlosoma punctatum* (Spotted Ground-Bird).—Plentiful.  
*Calamanthus fuliginosus* (Striated Field-Wren).—Fairly frequent.  
*Gymnorhina hyperleuca* (Lesser White-backed Magpie).  
*Cracticus cinereus* (Grey Butcher-Bird).—Plentiful.  
*Zosterops cærulescens* (White-eye).—Common.  
*Acanthorhynchus tenuirostris* (Spinebill).—Occasionally seen in summer time.

\* This may be the Raven (*Corone australis*).—ED.

- Melithreptus validirostris* (Strong-billed Honey-eater).  
*Glycyphila fulvifrons* (Fulvous-fronted Honey-eater).  
*Philotis flavigularis* (Yellow-throated Honey-eater).  
*Meliornis australasiana* (Crescent Honey-eater).  
*Melithreptus melanocephalus* (Black-headed Honey-eater).  
*Acanthochæra mellivora* (Brush Wattle-Bird).—Occasionally seen.  
*Pardalotus affinis* (Yellow-tipped Pardalote).  
*Pardalotus punctatus* (Spotted Diamond-Bird).  
*Hirundo neoxena* (Welcome Swallow).—Summer visitant.  
*Petrochelidon nigricans* (Tree-Swallow).—Plentiful since summer of 1903.  
*Anthus australis* (Ground-Lark).—Only about since 1902, and leaves during frosty winters.  
*Artamus sordidus* (Wood-Swallow).—Plentiful from October to April.  
*Zonæginthus bellus* (Fire-tailed Finch).—Common.  
*Podargus strigoides* (Tawny Frogmouth).—Not common.  
*Ægotheles novæ-hollandiæ* (Little Nightjar).  
*Cuculus pallidus* (Pallid Cuckoo).  
*Cacomantis flabelliformis* (Fan-tailed Cuckoo).  
*Chalcococcyx plagosus* (Bronze-Cuckoo).  
*Calyptorhynchus funereus* (Black Cockatoo).—Plentiful.  
*Cacatua galerita* (White Cockatoo).—Rare.  
*Platycercus flaviventris* (Green or Yellow-bellied Parrakeet).—More plentiful than  
*Platycercus eximius* (Rosella).  
*Phaps elegans* (Brush Bronze-wing Pigeon).—Small numbers.  
*Coturnix pectoralis* (Stubble Quail).—Plentiful.  
*Synæcus australis* (Brown Quail).  
*Turnix varia* (Painted Quail).  
*Hypotænidia philippinensis* (Pectoral Rail).—Scarce.  
*Tribonyx mortieri* (Native Hen).—Plentiful.  
*Lobivanellus lobatus* (Spur-winged Plover).—Occasionally seen for a few days.  
*Gallinago australis* (Snipe).—Rare visitor.

The *Anas superciliosa* (Black Duck) occasionally flew across to the open waters towards the west, but I never heard that they ever settled in Wilmot waters.

NOTES.—A matter of interest I was unable to settle was whether one of the Tree-creepers (*Certhiidae*) was a resident of this district. I am almost certain that the *Climacteris leucophæa* (White-throated Tree-Creeper) was a frequenter of the great gums on the Government reserve, but was not able to get one shot for identification.

The introduced Goldfinch (*Carduelis elegans*) and Sparrow (*Passer domesticus*) have found their way to the district.

## A Note on *Oreoscopus gutturalis*, De Vis.

BY GREGORY M. MATHEWS, F.L.S., F.Z.S., M.B.O.U.

DURING his recent visit to England Mr. Dudley Le Souëf was entrusted by Mr. C. J. Wild, acting director, on behalf of the trustees of the Queensland Museum, with the type-specimens of several species described by Mr. C. W. De Vis, for comparison with the series in the British Museum.

Amongst these type-specimens was that of *Sericornis gutturalis* of De Vis (Proc. Roy. Soc., Queensland, vi., p. 244, 1889), a pretty little species discovered by Mr. Broadbent, near Herberton, in Northern Queensland. The bird turned out not to be a true *Sericornis*, and Mr. A. J. North described it under the new generic title of *Oreoscopus* (*Agricultural Gazette* of New South Wales, March, 1905, p. 247), describing at the same time the nest and eggs, forwarded to him by Mr. Elgner (*cf. Emu*, v., p. 47, 1905).

I have compared this type-specimen and another from Bartle Frere, collected by Mr. E. Olive, in the Hon. Walter Rothschild's collection with other Timeliine genera in the British Museum, and I find that the nearest ally to *Oreoscopus* seems to be the Indo-Malayan genus *Turdinulus*. Compared with *Turdinulus roberti* it is found to differ in its longer tail and distinctly scutellated, or rather plated, tarsus. In both genera the rictal bristles are very small and indistinct and confined to the gape.

Considering the species to be of more than ordinary interest, I have had much pleasure in having the accompanying plate (III.) prepared.

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## Description of a New Emu-Wren.

BY A. J. CAMPBELL, C.M.B.O.U.

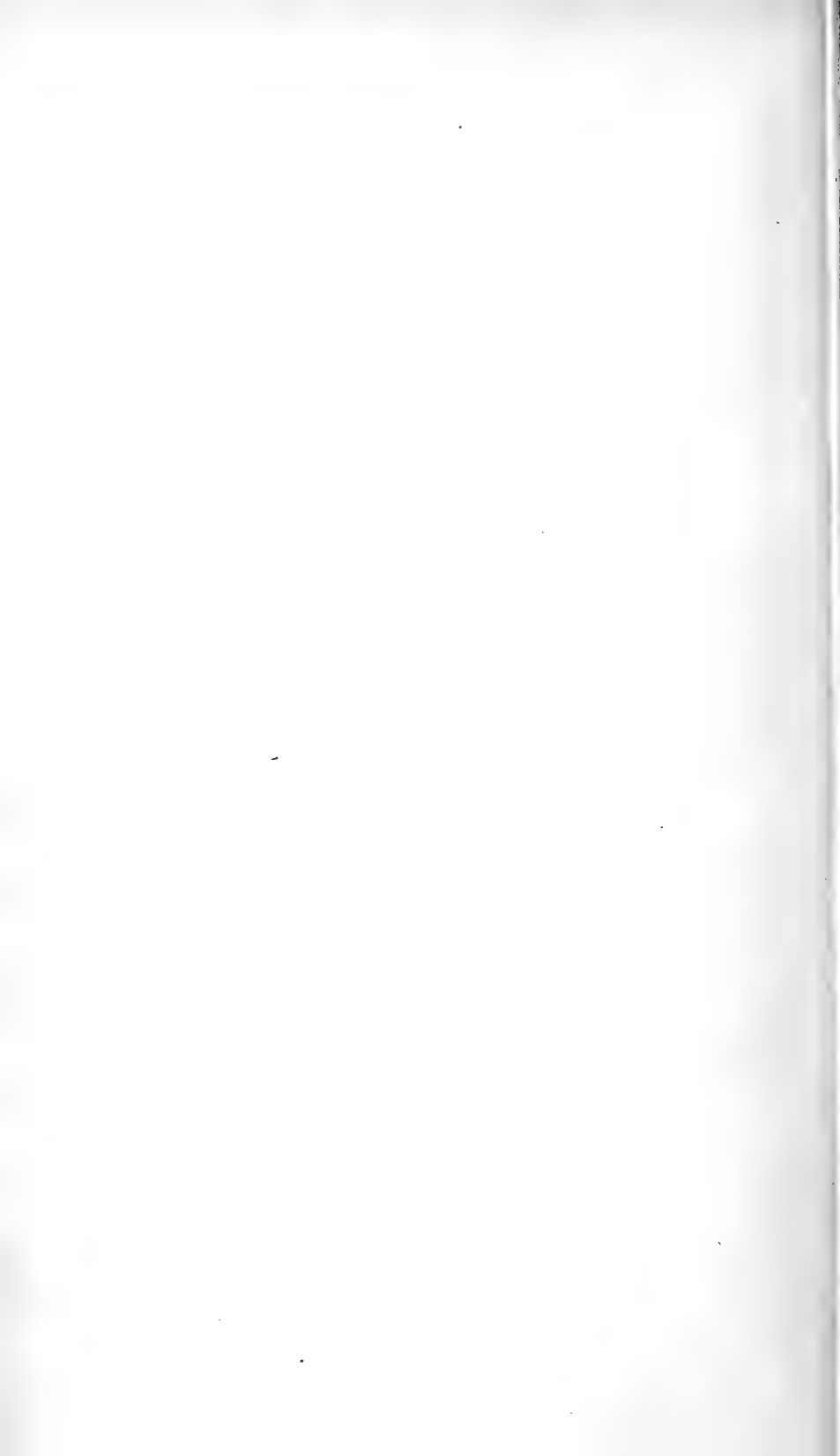
THROUGH Mr. Donald Macdonald's "Nature Notes," which are published weekly in *The Argus*, a new Victorian bird has been brought to light. Mr. C. H. M'Lennan, an observing bush naturalist, drew attention to an Emu-Wren frequenting the Mallee district. On being requisitioned for further particulars of the little bird, Mr. M'Lennan obligingly and promptly forwarded a skin for examination. At once it will be seen that the Mallee bird differs from the ordinary Emu-Wren of the more southern parts of Victoria and Tasmania by its general lighter colouring, by its smaller dimensions, except the bill, which is larger, and by the six loose feathers of the tail being less filamented. It appears to be an intermediate form between the common Emu-Wren and the Rufous Emu-Wren of North-West Australia. I have ventured to designate the new species *Stipiturus mallee*, or the Mallee Emu-Wren. Mr. M'Lennan, its discoverer, states that it is partial to the tufts of spinifex grass in the Mallee tracts, and is extremely difficult to detect.



J G Keulemans del. et. lit.

Latherly & Co Imp

CREOSOPUS CUTTII ALIS





*Description (Male).*—Forehead chestnut ; tail fuscous ; rest of upper surface olive-brown, each feather having a broad dark (fuscous) stripe. Lores, throat, and chest light purplish-blue ; rest of under surface greyish-brown.

Dimensions in inches :—Total length, 5 ; wing, 1.54 ; tail, 3.04 ; bill, 0.39 ; tarsus, 0.6.

(NOTE.—This note has been held over for some time in the hope that Mr. McLennan could procure another specimen, perhaps a female, but, on account of the shy nature of the little birds, he has, so far, been unsuccessful.—A.J.C.)

## The White-eye (*Zosterops coerulescens*): its Relation to the Orchardist.

BY A. H. CHISHOLM, MARYBOROUGH (VICT.)

THERE has been so much said to the discredit of this familiar little bird that I am tempted to take up the cudgels in its defence, and state my personal and practical experience of its destructive and useful traits.

*Z. coerulescens* is the only representative of the genus in this district, and is a fairly plentiful bird. About the end of December, just after the usual breeding season, two or three couples and their attendant young will gather together into a small flock, and set out upon a systematic tour through the orchards and vineyards. As about this time soft, sweet fruits, such as grapes, mulberries, &c., are ripening, it is not to be wondered at that the White-eyes, possessing as they do a decided taste for saccharine matter, are not slow to take toll of the luscious fruit hanging so temptingly in the sunshine. Then the angry grower, who sees only the empty skins hanging on the grape bunches, does not stop to consider the other side of the question, but sets innumerable poisons, and shoots the birds on sight, whereas, if he would only take the trouble to observe the bird, its habits, and its food a little more closely, he would soon be convinced of the undesirability of such a proceeding. Time and again have I debated this point with prejudiced orchardists.

It is principally during the autumn and winter months (when most birds are on their best behaviour) that the extreme usefulness of White-eye to the orchardist and horticulturist becomes most apparent. To enumerate some of its good qualities :—First of all, it is the great enemy of that most destructive pest the fruit tree aphid. I have frequently watched groups of White-eyes busily clearing aphid of various colours off all kinds of fruit trees. Each bird takes a certain branch area, and works systematically, industriously, and well. I am always sorry to see them leave, for I consider them better and certainly cheaper

than all spray pumps and other mechanical devices. As illustrating the "Blight-Birds'" decided usefulness with regard to another insect pest, the following note may not be out of place:—"28th July, 1907.—A damp morning. White-eyes plentiful in the garden, hopping up the (now) bare branches of the trees, peering under the damp bark, and picking out large numbers of parasitical insects, which, if left to themselves, would in the end ruin the trees."

I have also frequently watched this energetic little bird feasting on some small insect (name unknown to me) which causes a lot of damage among the rhubarb plants. And if this were not sufficient evidence to support its claim to the friendship and protection of the orchardist, it is a great enemy of the codlin-moth and pear-tree slug—two of the greatest pests the grower has to contend with. No doubt many more cases outside my knowledge of its useful traits could be cited, but these should convince any fair-minded grower of White-eye's great value to him. Taking it on the whole, I can unhesitatingly affirm that (in this district, at all events) the good done by this much-maligned little bird far outbalances what little damage it may cause; in fact, I consider that the bird is justly entitled to a little laxity in the spring and summer in return for the incalculable amount of good it does during the cooler months.

### The Value of Babblers as Insect-Destroyers.

By A. H. CHISHOLM, MARYBOROUGH (VICT.)

MR. J. A. Leach's recent timely reminder as to the extreme usefulness of the Babbler, or Codlin-moth-eater (*Pomatorhinus temporalis*)\* will be sure to meet with the approval of every person who has had any experience of the bird.

As a practical illustration of its value I may mention a case that came under my notice recently. A grub, light green in colour, and varying in size from half an inch to an inch and a half long (probably the larva of the agrotis moth), was attacking my rhubarb plants in great numbers, and bade fair to ruin the whole of the plants, when my friends the Babblers took part. The grubs did not come out during the day, but hid in the soft earth at the foot of the plant, only coming out to feed when the night fell. This fact did not deter the Babblers in the slightest degree. As soon as they located the grubs the birds arrived in dozens, and all day long were to be seen digging and pecking with great vigour all around the plants. In a very short time, where formerly there were hundreds, there was not a single grub pest left—vanquished by my inexpensive allies.

\* Campbell, "Nests and Eggs," p. 272 (1900); French, *Agric. Journal of Victoria*, p. 68 (May, 1903).





Nest and Egg of the Marquis Raggis Bird of Paradise (*Paradisica raggiana*). In the collection of Mr. Atlee Hunt, Melbourne.

## Stray Feathers.

CAPT. A. Simpson states that in the latitudes he usually steams between the Cape of Good Hope and Australia, he has noticed of late years, from whatever cause, a decrease in the number of Cape Petrels (*Daption capensis*) generally seen on that track.—A.J.C.

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NEST AND EGG OF PARADISEA RAGGIANA.—The nest and egg of this beautiful bird were found in southern New Guinea last December, and were forwarded to Mr. Atlee Hunt to add to his interesting ornithological collection from New Guinea. The loosely-built nest was built in a fork of a thickly-foliaged ficus-tree, and is composed outwardly of rather coarse rootlets and vines, in which are embedded large leaves; the lining is composed of fine dark-coloured rootlets and tendrils. The measurements are:—Outside depth, 5 inches; depth of nesting depression, 2 inches; outside breadth, 7 inches; and breadth of nesting depression, 4½ inches. The egg is much elongated, and was fresh when found, only one being in the nest. Its ground colour is cream, with light reddish-brown and brownish-purple streaks and dashes of varying length, mostly starting from just below the apex of the larger end. The egg measures .94 inches by 1.70 inches.—D. LE SOUËF. Melbourne. (See Plate IV.)

\* \* \*

THE RED WATTLE-BIRD (*Acanthochæra carunculata*).—On account of the early flowering of the various eucalypts, these birds have arrived here over a month earlier than last year. Although the main body of the "Wattles" has not yet arrived, the birds are very plentiful about the bush, and their numbers are being added to daily. It would be interesting to know how the birds learnt of the early flowering of the trees. I notice they do not confine themselves to a honey diet, but may be seen ever and anon darting after various insects. The blossoms of the iron-bark (*Eucalyptus*) trees are specially favoured by these birds. During their autumnal visits the "Wattles" are generally accompanied by a good number of Warty-faced Honey-eaters (*Meliphaga phrygia*), but these pretty birds have not, as yet, put in an appearance, though there are dozens of the smaller Honey-eaters and a few Lorikeets.—A. H. CHISHOLM. Maryborough (Vict.), 8/5/08.

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SPOTTED BOWER-BIRD. — The following notes on the Spotted Bower-Bird (*Chlamydodera maculata*), culled from a letter from a bird-observer living up in the heart of Western Queensland, will be of interest. My friend writes:—"One of

the most curious traits of the Spotted Bower-Bird is the great variety of noises emitted by them if their nest be disturbed. As you know, they are great mimics, and when disturbed from their nests they will sit somewhere near (often in the same tree) and make the most life-like noises imaginable—some faithfully imitating wild cattle running in the scrub,\* others resembling branches of trees creaking and breaking, and many other startling sounds calculated to draw the attention of the intruder away from the nest. The egg-robber naturally stops to see where the cattle are coming from. The sounds cease; then, as he again climbs towards the nest, they break out afresh, until, at last locating them, the bird is seen close above in the boughs. The nest is a frail structure of twigs, generally placed in a branch of mistletoe, though I once found one in the fork of a dog-wood tree.”—A. H. CHISHOLM. Maryborough (Victoria), 8/5/08.

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ZOSTEROPS CÆRULESCENS NESTING.—Though their general nesting months are October to December, the White-eyes are not very exact in this respect. During the past season, I found one nest as early as August, and another as late as January. The favoured spot for the nest is generally in a fruit tree, at a height of about 6 feet from the ground, but, in the former case, the nest was placed in a “monkey-nut,” at a height of over 20 feet.

In connection with this bird we discovered rather a peculiar and pathetic little tragedy in the garden the other day. A White-eye had built its nest in one of the pear-trees, and, instead of the usual building material (fibres, grasses, &c.), it had constructed the nest almost wholly of cotton and fine string. While this novel building material made a very neat domicile, it was the direct cause of the disaster referred to, for in sitting on the nest, the unfortunate little bird had by some mischance got its feet hopelessly entangled in the twine. All its struggles failing to release it, the unnoticed little victim had slowly perished. When found there was nothing but a few feathers and a bleaching skeleton, with the feet still stuck fast in the bottom of the nest.—A. H. CHISHOLM. Maryborough (Vict.)

\* \* \*

SWALLOWS AND SWIFTS.—A friend in Launceston, Tasmania, Mr. H. C. Thompson, A.O.U., wrote me in March that on the second day of that month there was a great mustering of Tree-Martins (*Petrochelidon nigricans*) about the wharves on the Tamar, the birds settling on the rigging of the small vessels

\* See also “Nests and Eggs” (Campbell), p. 201, 2nd par.—EDS.

moored there, also on the piles which have been driven into the swampy flat. It is very unusual to see this species in quantity about in the town, as it usually keeps away in small companies along the river or among the trees of the bush. They appear to have reached northern Tasmania in much larger numbers than usual during the past spring and summer, as a friend of Mr. Thompson's who lives out some miles from the city on a sheep-run, and who also is a keen observer, found that the Tree-Swallow had driven the ordinary Swallows (*Hirundo neoxena*) from their nests under his verandah, and, having lined the nests with gum leaves, had proceeded to lay and incubate therein. Mr. Thompson saw a clutch of their eggs from this place; they were three in number, and he describes them as much rounder than those of the Swallow and very prettily marked. This proceeding of ousting the *Hirundo* from its mud structure and usurping the same for breeding purposes is most unusual with the *Petrochelidon*, as far as our experience goes. Within my own knowledge, it always bred, on the North-West Coast, high up in holes of dead gum-trees, and never seemed to care for the proximity of a town, thus differing *in toto* from the other species.

Spine-tailed Swift (*Chaetura caudacuta*).—This fine bird has the peculiarity in some seasons of not making its appearance across the Strait until the end of summer. I have seen them from Mt. Bischoff, after a storm, up very high in the air, dashing along in their splendid strong flight, in the month of February, none having been noted previously. Mr. Thompson had not observed any this season when he wrote at the end of February, but on the 15th March he saw two pairs over the Cataract Hill, in showery weather with a north-east wind. After circling over the hill for some time they made away to the south.—H. STUART DOVE. Moonee Ponds, 27/5/08.

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## Forgotten Feathers.

BY J. R. M'CLYMONT, M.A., HOBART.

THE DERIVATION OF THE WORD PENGUIN AND THE BIRD DENOTED BY THE NAME PIJLSTAERT.—“Penguin” may come to us from Latin through French, either from *pinguis*, fat, or from *pingue*, fat between the skin and the flesh. There are two forms of the word in French—*pinguin* and *pingouin*. The final *in* is merely a substantival and adjectival affix. *Pingui* is employed by François Pyrard, whose *Discours du voyage des François aux Indes Orientales* was published in Paris in 1611, but it is evident from the context that he does not designate a Penguin by this name. Clusius, whose *Exoticorum libri decem* was published in 1605, employs *Pinguins* as if it were late

Latin, and affirms that they were named by the Dutch "a pinguetudine qua erant præditæ." But this is certainly an error, for the name in some form or other was employed of great auks before 1595, in which year it was employed of Penguins by the Dutch. In a narrative of the first expedition of the Dutch to the Eastern Archipelago, written by "G. M. A. W. L." (William Lodewijckszoon), and published in Amsterdam in 1597, Penguins are mentioned. The work was translated into English by "W. P." (William Phillip), and this translation was published in London in 1598. It is a very scarce book, and the title of it does not appear in the printed "Catalogue of Printed Books in the British Museum." But one or more examples must have existed in 1812, for it was reprinted in London in that year in "A Selection of Curious Rare and Early Voyages." From this reprint I extract the following sentences:—"The second of August (1595) we saw the land of the Cape de bona Sperance and the fourth of the same Month we entered into a haven called Agne Sambras (i.e., Agua de Sam Brás) where wee ankered and found good depth at 8 or 9 fadome water, sandy ground. The 5 day we went on shore to gather fruite, therewith to refresh our sicke men that were thirty or 33 in one shippe. In this bay lyeth a smal Islande wherein are many birdes called Pyncuius (*sic*) and sea Wolues that are taken with mens handes." In Dutch editions of the narrative the name of the birds is printed "Pinguyns." "Pyncuius" is doubtless a typographical error, and "Pyncuins" the correct reading. Pylstart Island received its name from Abel Janszoon Tasman, as he has recorded in his Journal under the date January 20, 1643, in the words:—"Dit eijlandt hebben wij de naam gegeven van het hooge pijlstaerts eijlandt om datt soo vies pijlstaerten ware." Pijlstaert—in modern spelling Pijlstaart—is the Pintail. One Polynesian Pintail is known—*Dafila modesta*—but it appears to have been recorded only from Sidney Island, in the Phoenix Group, and it is, I think, more probable that it was the Australian Wild Duck (*Anas superciliosa*) which Tasman saw, for that Duck has a range in Polynesia which extends from the Pelew Islands to the Society Islands, and includes the Fiji, Samoa, and Tonga Islands. The Palæarctic Pintail (*Dafila acuta*) in its summer plumage is nearly as dark in colour as the Australian Wild Duck, and it is at that season destitute of the long tail-feathers from which it derives its English and Dutch names. Both Ducks have green specula.

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CUCKOO CAUGHT.—A Cuckoo, flying between an outhouse and a shrub on The Range, became entangled in a spider's web, fell to the ground, and was picked up by a spectator of the accident.—*The Morning Bulletin*, Rockhampton.



## From Magazines, &amp;c.

EGRETS' EGGS.—At the August (1907) meeting of the Field Naturalists' Club of Victoria Mr. A. H. E. Mattingley exhibited the eggs of the Plumed Egret (*Mesophoyx plumifera*) taken by himself the previous season, and stated to be "previously unrecorded for Australia."\*

At the September (1907) meeting of the Linnean Society of New South Wales Mr. A. J. North sent for exhibition a set of eggs of the Plumed Egret (*Mesophoyx plumifera*) with a note that the eggs "were taken by Mr. Septimus Robinson on Buckiinguy station, N.S.W., on the 8th November, 1893."†

It is hardly just to oological students that such an up-to-date authority as the Ornithologist of the Australian Museum should suppress the description of rare and interesting eggs for fourteen years!

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HONEY-EATERS PLENTIFUL.—During the present season large numbers of Honey-eaters have visited the Adelaide plains, and the Reedbeds district being a well-timbered and verdantly-clothed locality, it is little wonder that these birds have made it their chief rendezvous. The subject was brought under notice by Mr. J. W. Mellor at a recent meeting of the South Australian Ornithological Association held in the district. The largest of the family, the Red Wattle-Bird (*Acanthochæra carunculata*), are extremely plentiful, and unusually energetic in eating fruit, especially luscious peaches and well-ripened plums and figs, their mode of devouring them being to insert their powerful bill into the fruit, and by means of their large brush-like tongue wiping and sucking the juice and flesh until nothing but the skin and stone are left. Brush Wattle-Birds (*A. mellivora*) are also present, but are not fruit-destroyers like the larger variety. The White-bearded Honey-eater (*Meliornis novæ-hollandiæ*), often called the "Yellow-wing," is to be seen flitting in the thick bushes, while in the higher trees the White-plumed Honey-eater (*Ptilotis penicillata*), known to the small boy as the "Greenie," may be seen, in company with several of the *Melithreptus* family, notably the Black-throated Honey-eater (*Melithreptus gularis*), often called the "Black-cap," the Lunulated Honey-eater (*M. lunulatus*), and the Brown-headed Honey-eater (*M. brevirostris*). The pretty Spinebill Honey-eater (*Acanthorhynchus tenuirostris*), with its needle-like curved bill, resembles the handsome little Sun-Bird, as it flits and darts hither and thither, thrusting its well-adapted bill into the long tubular flowers to

\* *Victorian Naturalist*, vol. xxiv., p. 84 (Sept., 1907). See also *Emu*, vol. vii., p. 91 (Oct., 1907).

† *Proc. Linn. Soc. N.S.W.*, vol. xxxii., part 4, p. 629 (issued 11th March, 1908).

extract the sweet nectar, which is out of reach of the shorter-billed birds. The Singing Honey-eater (*Ptilotis sonora*) is also present, and somewhat troublesome, owing to its love for a little fruit in the hot weather. A bird not previously observed in the district is the Tawny-crowned Honey-eater (*Glycyphila fulvifrons*), which is usually found in open heath country, where it leads a somewhat solitary life. The Noisy Miner (*Myzantha garrula*), another of the Honey-eaters, often seen in the hills, has also made a visit to add its name to the record. It is thought that the appearance of the birds is due to the abundance of eucalyptus now in bloom, from which this family draw their chief food supplies.—*Advertiser* (Adelaide), 10/2/08.

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THE WAYS OF THE EMU.—In *The Australasian* of the 21st March last, Mr. C. H. M'Lennan, under the *nom de plume* "Mallee-Bird," contributed a valuable field observer's paper on the Emu (*Dromæus novæ-hollandiæ*). Mr. M'Lennan's remarks are the more interesting because he is a genuine student of the bush, besides being a successful dingo-hunter, and writes what he has personally studied, taking nothing for granted. Regarding the breeding habits of the Emu, Mr. M'Lennan states:—"I have reason to think that in selecting its nesting place the Emu has some strange foreknowledge of the weather—call it instinctive or what you please—because I have noticed that in seasons which have turned out very wet the bird frequently builds its nest on high ground, and, as the nesting season begins often as early as the month of June, and extends to November, the nest site has to be selected before the winter and spring rains have fairly set in. The nest is generally placed amongst low scrub upon a slope facing the rising sun; but in seasons which afterwards turned out to be exceptionally dry I have found the nest on low ground, even in depressions. The lignum swamps are another favourite nesting place, and there, of course, the bird usually selects one of the hummock islands. Building the nest is not a matter of much importance. The eggs are as often as not laid upon the bare ground, surrounded with a ring of twigs, leaves, and other loose litter in the outline of the Emu's body. There is generally a slight depression where the bird has scratched away the loose earth, but occasionally the eggs are found lying upon a bed of dry leaves. The female lays in the early morning, an egg every second day, and I notice two distinct types of egg both in shape and colour. One of them is pale green, and round in shape, in contrast with the other, which is more of an oval or pear shape, the shell a deep, dark shade of green, and much thinner than in the other type. From the time the last egg is laid until the first downy chick is hatched varies from 54 to 57 days, and that is the period when

the habits of the birds form a most interesting study. As far as my personal observations go, a full clutch varies from seven to eleven eggs. The greatest number I found in one nest was seventeen, but in this instance I think two birds laid in one nest. There is a good deal of controversy upon this point, and it is a matter upon which few naturalists are able to get direct evidence, but on two or three occasions I have satisfied myself that a pair of females used the same nest, and have studied the tracks of the birds closely in order to make sure of it. My opinion is that in every case where an exceptional number of eggs were found in one nest it was used by more than one female. One day I found a most remarkable clutch in a nest placed in dry lignum, which contained seven Emu eggs and a pair of Native Companion's\* eggs. I intended to watch that nest closely for results, but unfortunately it was raided by an egg-collector, who had no curiosity as to what would happen when the Companion chicks were, in the natural course of events, first hatched. These two eggs were placed in the centre of the Emu clutch, and I noticed a pair of Native Companions feeding in the locality. The Emu's habit of drumming near the nest is one of the best aids in finding it. The female generally drums in the evening, and by drawing a straight line on the ground in the direction of the drumming you have a pointer in searching for the nest next day. In the laying season the female generally booms early in the evening, about twelve resonant notes in succession, with a short interval between each. The drumming of the female is loud and rather harsh towards the end of the call, the note of the male sharper and more distinct. Few birds of the bush take a larger share in the hatching and rearing of the family than the male Emu. He is the first to sit as soon as the clutch is complete, and rarely goes far from the nest site from the time the first egg is laid until the young are hatched, while the female, during the day, when she is off duty, wanders over a considerable range of country. She generally returns to the nest towards evening, and relieves the male bird for an hour or two each night, commencing about the second week and continuing from 14 to 20 nights. Afterwards the male has complete charge, and though in the early stages of incubation he only sits from two to four hours each day, at a later period he seems loth to leave the nest even when alarmed. At first, when any suspicious sound excites the vigilant male he leaves the eggs at once and sneaks away stealthily through the scrub. At the end of a few weeks, however, even with an intruder close by, he crouches low upon the nest with his head and neck flat upon the ground, and his sombre plumage is then so closely in harmony with his surroundings that he is not easily

\* *Antigone australasiana*.—EDS.

detected—a surprising circumstance with a bird so large as the Emu. The female may generally be seen making a straight line for the nest in the evening, and wandering off from it again at dawn. Nearing the nest the course of both birds is always erratic; they circle about it for a time, approaching from all points of the compass. However the trails may vary they all unite at one point, and thence for about fifty yards there is a straight line for the nest, which from much trampling finally becomes as clearly defined as a beaten ‘pad.’ Even when the female lets him off duty for a few hours at night the male is never far distant, and on the first sign or sound of alarm the faithful sentinel makes straight for the nest, his feathers ruffled up in fury until he looks quite a formidable adversary. If the intruder be a tame dog or a dingo the bird goes straight at him, pecking and kicking, and soon drives him off. The male Emu is a match for more than one dingo. I have on occasions seen him keep two or three hungry dingoes at bay, and after a battle lasting perhaps twenty minutes drive them off, though they prefer the flesh of the Emu even to that of the kangaroo, and manage to kill a great many of the birds when partly grown. After the young are hatched the female still takes the lesser share of the trouble. For two or three weeks both parents are in charge of the brood. When they are wandering in search of food or water the male is invariably the advance guard, while the hen brings up the rear, but when the mother finally leaves the family as they gain strength the ‘old man’ changes his tactics and always follows the young. With them it may be truly said that eternal vigilance is the price of safety, and for his natural enemies the male Emu is ever as alert as he is intrepid. He is quite aware that the dingo, whom he has most to fear, is likely to attack the young from the rear, through having first crossed their trail and then followed up the scent, hence his change of disposition as soon as the hen deserts him. Any suspicious object seen for the first time greatly excites his curiosity. Standing stock still for a while, he investigates the strange object closely, then, with head and neck poised, slowly approaches it, uttering now and again that booming note peculiar to his kind, flapping his tuft-like immature wings as the birds always do when drumming.”

[The only debatable ground Mr. M'Lennan raises is at the beginning of his capital article, when he states “the nesting season begins *as early as the month of June*, and extends to November.” Does he mean that eggs may be found between these months, or are the young hatched by November, and is that season peculiar to the Mallee? Reference to Campbell's “Nests and Eggs,” p. 1,061, shows that in Riverina (not more than 100 miles as the crow flies from Mr. M'Lennan's locality) the census for an Emu-egger's camp gave the total finding

of nests for two consecutive seasons as follow :—April, 1 nest ; May, 17 nests ; June, 22 nests ; July, 4 nests. From this it would appear that the earlier breeders lay towards *the end of April*, some birds in May, and the majority have laid by June or July.—EDS.]

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## Reviews.

[“ A Monograph of the Petrels (Order Tubinares).” By F. Du Cane Godman D.C.L., F.R.S., &c.]

A NOTICE of this classical work appeared in *The Emu* (vol. vii., p. 205) on the publication of part i. Part ii. has now been received, and maintains the high standard of excellence of part i. In the present part the following Australian Petrels are dealt with, namely :—*Puffinus leucomelas*, *P. bulleri*, *P. chlororhynchus*, *P. gavia*, *P. assimilis*, *P. carneipes*, *P. griseus*, and *P. tenuirostris*. Perhaps more could have been stated about the last-named—the popular and important “ Mutton-Bird ”—but possibly other writers have elaborated enough respecting it.

The following is the history of the “ Monograph,” taken from *The Ibis* (April, 1908) :—

“ We have already (*Ibis*, 1907, p. 515) stated the circumstances under which the illustrated work on the Petrels projected by the late Mr. Osbert Salvin and Dr. Godman came to a stop in consequence of Salvin’s death, and have announced Dr. Godman’s recent determination to complete the work as nearly as possible in the manner in which it was originally planned. The Tubinares, which, besides the typical Petrels, contain the Shearwaters, Fulmars, and Albatrosses, had long been one of the favourite groups of Salvin, who prepared in 1896 the well-known account of them contained in the 25th volume of the ‘ Catalogue of Birds in the British Museum.’ It was the intention of Salvin, after the completion of the last-named work, to issue, in conjunction with Dr. Godman, a series of coloured illustrations of these interesting birds, and at the time of his death (in 1897) many of the plates had been drawn and coloured. Dr. Godman has now resolved to have the series of plates completed, and ‘ to issue them in the form of a Monograph, adding such synonymy and remarks on the geographical distribution of the species as Mr. Salvin had originally intended and bringing the work up to date.’

“ Since 1896, as we are informed in the prospectus, considerable additions to our knowledge of the Tubinares have been made by Mr. Walter Rothschild, who possesses a splendid series of these birds in the Tring Museum, and some remarkable discoveries concerning them have followed from the researches of the American naturalists on the Pacific coast of North America. The late Sir Walter Buller has likewise contributed much to our

information concerning the Antarctic species of Petrels in the 'Supplement' to his 'Birds of New Zealand.' This Monograph, however, is chiefly based on the large series of specimens in the British Museum, which now includes the original 'Salvin-Godman' collection."—A.J.C.

[“Geographical Variations in Birds.” By C. W. Beebe, Curator of Birds, The Zoological Park, New York.]

SOME forty interesting pages are devoted to the subject, with special reference to dichromatism and melanism in birds, as well as in other animals. The moist parts of south-west and south-east Australia are specially interesting in comparison, while Tasmania fits in with “a decrease in size southward, in addition to a change in colouration,” for everywhere one sees the tiger snake (*Hoplocephalus curtus*) well showing the darkening tendency. A second example always before us is the *Pachycephala melanura*. In Tasmania the black tail is constant, almost without exception, while on the mainland one occasionally sees the black tail in the mainland form (*P. gutturalis*) of the island species. I take it the Tasmanian form shows a clear case of melanism when the grey tail is no longer grey but black. Reversion with change from island to mainland may occur as with Mr. Beebe's examples of south to north on the continent. In a case of melanism it is all over the world, apparently, a difficult matter to fix a species. After some hundreds of generations in a changed climate the species will revert when conditions again become as they were. “That humidity in some way influences the metabolic processes which lead to pigmentation can hardly be doubted” (p. 5). Uric acid in excess may be a reason, but chemists have not yet settled the question. Local differentiations are transmitted from parent to young, and are hereditary, in the usual sense of that term. “The different factors of the environmental complex do not have any specific influence upon colouration, but all act alike as stimuli, either alone or in combinations, to accelerate or retard colour development, and thus to modify colouration in the following way:—

- “a.—Towards melanic or albinic conditions, which are most general and important in colouration.
- “b.—Towards suppression or accentuation of particular colour areas or groups thereof.
- “c.—Toward changes in the colours themselves.”

Prof. Davenport speaks of black plumage as a “discontinuous characteristic,” and one that cannot be modified or is capable of becoming an intergrade. Mr. Beebe quotes diverse views of competent biologists, and remarks upon how little we actually know, not only of the direct action of the various climatic factors of the environment, but of the relative importance of these

factors (temperature, humidity, and light), both in the ontogenetic and phylogenetic history of the various organisms. Of the various externally exerted stimuli we know little.

As an example of dichromatism Mr. Beebe quotes our *Stercorarius*. In the northern hemisphere, where the small Skuas breed, it is very common to find a parti-coloured bird mated with one wholly dark. Confined to Australia, a good example is the *Gymnorhina* on land and the Reef-Heron on water. A case is quoted of a parallel case of a Heron in the waters of the United States of America, where parti-coloured birds are not uncommon. On p. 15 Mr. Beebe says:—"While it is impossible to correlate with more certainty the foregoing examples of melanism and dichromatism, yet we should keep them all in mind while endeavouring to interpret the results of future field studies or experimental researches along these lines." Australia offers a splendid field to the workers of every State for such research. No student need say the field is without opportunity. It is there, and one full of interest. The study of our desert forms is a live one for those living far back, while for the coastal people the plumages of *Pachycephala* are full of interest—the foundation of the rufous race geographically, the "medieval" period of greys, and the modern species of many colours—the three phases showing in any one male bird in three years.

Mr. Beebe draws attention to *Munia flaviprymna* as being a desert form of *M. castaneithorax*, and quotes an Australian trapper of great experience for the opposite opinion, in so far as he has always met each bird true to its species. Everywhere there is a field for the man who interests himself in the birds—abroad or in the aviary.

Some pages (15-18) are given to the question of sporadic melanism. Australia renders its examples. The writer has a good example in a specimen of the White-plumed Honey-eater, the throat being particularly dark, and the body not normally greenish. This species generally appears true to its type.

In Tasmania there appears to me to be a tendency to melanism, judging by the birds I have recently seen. Pages 31-33 are given to "The Direction of Evolution." Melanism in humidity is said to be not subject to mutation and natural selection. One author considers "the direction of evolution can never be reversed;" another asks, "Can the direction of evolution ever be anticipated?" "Interesting and significant as the results are, they but open up innumerable new vistas of unexplored fields."

Mr. Beebe sounds a warning note with regard to naming variations. The scientific world of to-day considers its nomenclature as near as possible to the natural order of evolution, while it may still remain a help to working naturalists.—R. H.

## Correspondence.

THE CAPE BARREN GOOSE.

*To the Editors of "The Emu."*

SIRS,—Surely Mr. Armstrong is rather hasty in his remark (*Emu*, 1st April, p. 182):—"I entirely disagree with the opinion expressed by your correspondent, Mr. J. D. Maclaine, who, writing from Clarke Island in 1906, stated that the Cape Barren Goose was holding its own. He quoted someone as having seen a flock of 200 on Chalky. I don't think there are 200 Geese in the whole group."

To begin with, an ounce of positive evidence is worth a ton of the negative sort. Mr. Maclaine is an old resident of the islands, and his evidence is entitled to the greatest respect. Mr. Armstrong only spent 10 days altogether on the islands, which is utterly insufficient for such a sweeping generalization. He says that he expected to see lots of Geese "as it was the breeding season." And his visit took place in the middle of November! Surely Mr. Armstrong knows that this Goose commences to breed in July, and that August and September are its closing months for breeding? The Geese are, in November, scattering for their summer migration to the mainland.

There is another bit of decisive evidence to show that Mr. Maclaine is correct. I think I am correct in assuming that all of the Geese which visit the western plains of Victoria come from the islands that Mr. Armstrong visited. Well, only last summer two flocks of these Geese were counted while feeding—within a day's ride of Mr. Armstrong's residence—and there were 136 in one flock and 98 in the other. In addition, there were hundreds of Geese in smaller flocks in the same neighbourhood. I know of about twenty haunts of the Geese on our plains, where there are at least 1,000 Geese every year. This summer they were as abundant as ever, so that they can fairly be described as "holding their own."

At the same time I am at one with Mr. Armstrong in his desire to see them properly protected, as they are one of our finest and most interesting birds.—Yours, &c.,

Noorat, 13/4/08.

FRANK S. SMITH.

*To the Editors of "The Emu."*

DEAR SIRs,—When in Launceston recently I saw a copy of *The Emu*,\* in which there was an account of the visit of Messrs. Armstrong and Atkinson to the islands in Bass Strait. In their account they seem to be greatly disappointed at the rarity of the Cape Barren Geese, and question very much my statement

\* Vol. vii., p. 182.



to the effect that these birds are more than holding their own. They say that "they never saw more than two in one flock, and that the idea of 200 in one flock was out of all reason." You must recollect that I only quoted this from hearsay, and must say that my informant might have multiplied the number by two. However, to proceed: The islands which they visited (they were here during the nesting season), such as Chalky, Green, and Kangaroo Islands, and some others, are ones where the birds do not lay to any extent, and so one cannot wonder at their not seeing many there at the time of their visit, as the majority were away laying at the principal islands they nest on, such as Forsyth and Passage Islands, which they never visited at all. It is a pity that they did not go there, instead of stopping and searching some rocky islets at the north-east end of Clarke Island, as they were within 5 miles of Forsyth Island, where there is a harbour for small craft in all weathers; if they had done so, they would have been less inclined to ridicule my statements. I have been over these two islands, and found as many as 50 nests, with an average of four to each nest. The birds lay about three clutches on Rum Island, approximate to Preservation Island, which I believe Messrs. Armstrong and Atkinson visited. I have been over Preservation Island at certain times of the year, and have not seen a dozen birds on it, and at another time I have seen over 50.

My opinion is this—the birds seem to be just as numerous as, let us say, six years ago. Then one will naturally ask—"How is it, with the number of eggs that you have seen, that the bird is not increasing rapidly?" For answer, I was reading an account of the Geese, which arrive in certain parts of Victoria in large flocks, and feed about the fields and swamps; my theory is this—that many of the young birds, in company with the old ones, migrate there, and I presume that many are shot, as the bird is well known to be excellent eating, and this would account for their not increasing very rapidly. But I must emphatically say that I do not consider that the bird is getting rarer. Comparatively few are shot locally, and to give an instance in favour of the above, I was at Forsyth Island on 20th February, 1908, with a friend. We bagged three Geese, and in traversing the island we came to a beach about half a mile long, on which I counted 75 Geese. We calculated between Forsyth and Passage Island, which are within half a mile of each other, that there would be 200 or more Geese. I have nothing to gain by making misleading statements as to the number of the birds. I may be wrong in my calculations, but only do the best of my ability. In any case, one who is a resident has more opportunity of judging than one who makes a flying visit, and neglects to visit the principal breeding islands.

My brothers and I lease Passage Island for grazing, and lose a lot of valuable feed through the Geese being there; we could

soon lessen them by smashing all the eggs on both islands, without the slightest fear of being found out, which would certainly be the death-knell of this fine bird, but we have not the slightest intention of doing so, as we all admire them as a somewhat unique bird, and I understand these are the only places in Bass Strait where they breed.—Yours, &c.,

Clarke Island, 23/5/08.

J. D. MACLAINE.

### South Australian Ornithological Association.

THE eighth annual meeting of the South Australian Ornithological Association was held at the residence of Mr. A. H. C. Zietz on Thursday evening, 5th March. Mr. Zietz presided. The hon. secretary reported good progress during the year, several new members having joined. Interest in the study of native birds had not abated, but much had been done individually and collectively in the protection of useful birds, notably the little Kestrel (*Cerchneis cenchroides*), a species of the Hawk family, which had been totally protected, with other birds. The association had also used its influence in recommending the national reserve on Kangaroo Island. The financial report showed a good credit balance, and was adopted. The chairman read interesting notes by the late Mr. F. W. Andrews on bird life in the earlier days in the Mounts Compass and Jagged districts, and a pamphlet upon the meat-eating Kea Parrot (*Nestor notabilis*) of New Zealand, by G. R. Marriner, F.R.M.S. Mr. F. R. Zietz showed plates of Petrels and other illustrations of bird life. Mr. M. Symonds Clarke read a letter from Mr. W. C. Skipper, advocating the introduction of native birds into Botanic Park. A number of interesting exhibits were shown, including a series of Nightjars by Mr. A. H. C. Zietz, F.L.S., the White-throated Nightjar (*Eurostopodus albogularis*), Spotted (*E. argus*), and the Large-tailed (*Caprimulgus macrurus*), also specimens of the Flame-breasted Robin (*Petroica phoenicea*), and the Scarlet-breasted (*P. leggii*), and an interesting zoological collection. Mr. E. Ashby showed several birds from Port Keats, Northern Territory, notably a new Pigeon—the Lilac-mantled, which has just been described by Mr. A. J. North, of the Sydney Museum, as *Chalcophaps occidentalis*. Mr. Ashby also exhibited a Nightjar from New South Wales. Captain White showed nest and eggs of Rufous-breasted Shrike-Thrush from Tweed River. The following officers were elected:—President, Mr. A. H. C. Zietz; vice-president, Mr. M. Symonds Clarke; hon. secretary and treasurer, Mr. J. W. Mellor.

The next meeting of the Assciation was held at the office of Messrs. Saunders and Ashby, Adelaide, on the evening of 7th May, Mr. A. H. C. Zietz presiding. The hon. secretary read a letter from the Commissioner of Crown Lands relative to the total protection of Black Swans and the Kestrel. Several members bore testimony to the extreme usefulness of the latter bird in killing mice and small vermin. Mr. Ashby reported that the Government had refused to set aside an area at the western end of Kangaroo Island as a National Reserve and Park, and were only willing to consider the Cape Borda lighthouse reserve. The subject for discussion was "The Malurus Family," commonly known as "Wrens," and noted for the beautiful plumage of the males of all the species. The family is purely insectivorous, and therefore extremely useful in keeping down blight and small insect pests. The chairman showed 14 species of the male birds in illustration of some interesting remarks made, which were supplemented by 10 species exhibited by Mr. Ashby for comparison. Mr. Ashby also showed the Rainbow Pitta (*Pitta iris*), from the Northern Territory, the Western Australian Grass-Bird (*Megalurus striatus*), and the Western Field-Wren (*Calamanthus*

*montanellus*). Mr. J. W. Mellor exhibited eggs from Central Australia, being those of the Black-banded Whiteface (*Xcrophila nigrocincta*), Chestnut-crowned Babbler (*Pomatorhinus ruficeps*), and the Black-faced Wood-Swallow (*Ariantus melanops*). Mr. Ashby reported that several species of Honey-eating Lorikeets were now plentiful at Blackwood. Captain White noted the Flame-breasted Robin (*Petrarca phanicea*) common now at the Reedbeds.

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## Bird Observers' Club.

THE usual quarterly dinner was held at the Mia-Mia Tea Rooms, Collins-street, Melbourne, on Wednesday, 12th February, when thirteen members were present. At the business meeting there was a good attendance. Mr. A. J. Campbell occupied the chair. Apologies were received from Dr. C. Ryan, Messrs. F. P. Godfrey, Donald Macdonald, and Surgeon-General Williams.

After the minutes had been read and confirmed, the chairman, in an apt speech, welcomed as guest Mr. D. Seth-Smith, F.Z.S., London, editor of *The Avicultural Magazine*. Notice was also taken of Mr. D. Le Souëf's return from abroad. Mr. Seth-Smith, in responding, thanked the company for the hearty reception accorded him, and spoke at length on the pleasure it afforded him in being able to study the birds of Australia in their natural haunts. His first love for Australian birds had been inspired by the perusal of Gould's beautiful work. Nature notes were received from Mr. J. Christian, of Raywood, while Mr. T. H. Tregallas contributed a note on Cuckoos. Mr. Cole exhibited a well-preserved mounted Grey Goshawk, shot at Upper Hawthorn, Victoria, 27th February, 1870. The hon. secretary showed a beautiful series of eggs of the Pilot-Bird, the colouring varying considerably. After the conclusion of business Messrs. Nicholls and Mattingley showed some very fine lantern slides, depicting birds, beasts, fishes, and reptiles in their natural surroundings, some of the pictures being as rare as remarkable.

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## The Birds of Bass Strait.

### IMPORTANT NOTICE.

THE Field Naturalists' Club of Victoria organized three expeditions to the islands of the Strait—1887, to King Island, per s.s. *Lady Loch* (leader, Mr. A. J. Campbell); 1890, to Kent Group, per s.s. *Despatch* (leader, Mr. D. Le Souëf); 1893, to Furneaux Group, per s.s. *Alert* (leader, Mr. J. Gabriel).

During the next (November) session of the A.O.U., which is to be held in Melbourne, the Council hope to organize an expedition to visit some of the remaining unexplored and little-known islands of the Strait, notably Hogan Group and a small Albatross "rookery" never yet visited by ornithologists.

For members who dislike the tossing of the Strait, a quieter camp-out excursion will take place on Cape Wollomai, Phillip Island.

Members intending to join either expedition or excursion are invited to send their names to the hon. secretary, Mr. A. H. E. Mattingley, so that early arrangements may be made. The expedition can only take place if there be sufficient members to share the expense of a small steamer. *Such a trip is the chance of a life-time for an ornithologist or bird-lover.*

## "The Coloured Figures of the Birds of Australasia."

TO THE MEMBERS OF THE A.O.U.

*Per favour of the Editors of "The Emu."*

AS it will be necessary to ask for the loan of Australian skins for working up my book, "The Coloured Figures of the Birds of Australasia," I take this opportunity of asking all those who have collections, however small, to lend them to me.

If they are sent to me, care of the British Museum, I will pay all expenses, such as insurance, carriage, &c., to and from Australia. I am also prepared to buy any or all the collections sent, if a list of birds and the price is sent.

As will be seen from the following letter from Dr. Bowdler Sharpe, of the British Museum, all care will be taken of all the collections while in England.

It is important that collections be sent from all parts of Australia. But do not let each one think that someone else is sure to send, but let all who can send.

Hoping that all who have bird-skins will help,

Yours very truly,

GREGORY M. MATHEWS.

Langley Mount, Watford, England, 5/5/08.

DEAR MR. MATHEWS,—

As you are aware, our collection of Australian birds is by no means satisfactory, for, although most of the species are represented in the Museum, there are very few specimens with the exact localities, dates, &c.

You will, therefore, require the loan of many specimens, for the purpose of your work, from museums and collectors in Australia.

I write to say that any specimens sent to you on loan may be directed to this Museum to my care, and I will take every means to protect them. I shall be very grateful to anyone who is willing to help in the improvement of the national collection as regards Australian species.

Yours sincerely,

W. BOWDLER SHARPE.

British Museum (Natural History),

Cromwell-road, London S.W., 4th May, 1908.

[The Editors of "The Emu" have much pleasure in giving publication to these letters. What is good enough for Dr. Sharpe is certainly good enough for Australian ornithologists. Moreover, it is the boast of the citizens of the Commonwealth that they are the freest nation on the face of the earth, because they enact their own laws, &c. Here is a unique opportunity of making their own "History of the Birds of Australasia" by assisting Mr. G. M. Mathews in his great national undertaking.]

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OFFICIAL ORGAN OF THE AUSTRALASIAN ORNITHOLOGISTS' UNION.



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## ANNOUNCEMENTS.

Articles (technical papers should if possible be type-written) and communications intended for publication, also books and publications for notice, should be addressed to the Editors, *The Emu*, c/o MR. A. J. CAMPBELL, Custom-House, Melbourne.

MSS. of general articles should reach the editors at least six weeks prior to the issue of the number for which they are intended.

Occasionally, when funds permit, it is intended to issue Coloured Plates of hitherto unfigured Australian Birds. Voluntary subscriptions to a "COLOURED FIGURE FUND" are courteously invited from members.

The price of *The Emu* to non-members is 4/- per copy. Extra copies may be had by members at half-price.







Lipoa on Egg-Mound.

# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. VIII.]

1ST OCTOBER, 1908.

[PART 2.

## Thermometer-Bird or Mallee-Fowl (*Lipoa ocellata*).

BY A. H. E. MATTINGLEY, C.M.Z.S.

### PART I.

HABITAT AND GEOGRAPHICAL DISTRIBUTION. — In those regions of Australia far from the haunts of white men, where there is very little surface water, and the soil is consequently clothed with stunted drought-resisting eucalypts such as *Eucalyptus incrassata*, *E. gracilis*, *E. oleosa*, *E. uncinata*, *E. behriana*, acacias such as *A. brachybotrya*, as well as other varieties, *Banksia ornata*, pines, and other dwarf vegetation, consisting of hakeas and grevilleas, dwells an ornithological enigma commonly known by its several vernacular names of Native Pheasant, Brush-Turkey, Lowan or Mallee-Hen, and by its well-chosen technical name of *Lipoa ocellata*, which literally means spotted-egg leaver. The Lipoa, which has an extensive range in southern Australia, was called by the aborigines of some of the western districts of the State of Victoria Low-an-ee, Louan, or Lowan, and it was from the latter of these that it has derived one of its vernacular names.\* In the Wimmera River district, in western Victoria, a large tract of country, classified locally as a shire, has been named Lowan after the Lipoa, which bird is found within its confines. The bird's other vernacular name, and the one it is best known by, is Mallee-Hen. Mallee is an aboriginal name for thicket, and this native name is universally applied by settlers to areas of country clad with stunted eucalypts in certain districts of the States of New South Wales, Victoria, South Australia, and Western Australia. In these parts the Mallee extends for miles in one unbroken sea, as it were, and rippled like the waves of the ocean where the Mallee-clothed sand dunes rise in regular lines of uniform height from the surrounding level. Although the Mallee is the principal habitat of the Lipoa, yet these birds are sometimes found frequenting a mixed class of country. They prefer, however, the more arid southerly regions of Australia, partly on account of the type of vegetation which these dry areas support.

\* For further historic records see "Nests and Eggs," by A. J. Campbell.

Being now essentially ground-frequenting birds, it is necessary that they should be protected by an open jungle through which they can readily run to avoid their enemies on the one hand, and on the other where they can search for food unhampered by a dense undergrowth. Nevertheless, the main reason why they frequent the Mallee is that this type of growth is essential for the successful incubation of their eggs, which they lay in their tumuli or mounds. The Mallee scrub is open, and its narrow, lanceolate leaves, set on the tops of this eucalypt's slender trunks, which usually branch out from the root in separate stems to a height of between 4 feet to 20 feet, averaging some 10 feet in height, allow the sun's rays to penetrate and warm the mound, thereby assisting the heat engendered by the fermenting vegetable material with which the *Lipoa* surrounds its eggs, the warmth of which is necessary to successfully hatch them out. Years ago, before the country was opened up, the Mallee-Hens existed within 35 miles to the west of the city of Melbourne, and ranged through southern Australia as far north in New South Wales as Wilcannia, lying between the 31st and 32nd deg. south latitude, to which position also they have been found to reach in South Australia, whilst they extend as far north as the tropical Murchison River district in Western Australia, which lies between the 26th and 28th parallels of latitude. Evidences of the existence of this bird have been found between Cue and Separation Well in the great North-West Desert of Western Australia. One of the reasons why they did not get so far north on the eastern side of the continent as on the western is due to the south-western half of Victoria being separated from the eastern half by a wide, dissected volcanic plain, forming a natural barrier, whilst the only available bridge leading from the western half to the eastern half of Victoria is the main Dividing Range; but as this leads into country heavily timbered, and supporting a dense forest growth inimical to the incubation of their eggs, the birds' progress in that direction was also blocked. Although there are suitable habitats for these birds to the north of the main Dividing Range, especially along the River Murray, yet many plains intervene and prevent dispersal in that direction. Whilst the habitat of the *Lipoa* has such an extensive range in the Eyrean region, yet the areas frequented by it do not impinge on those inhabited by the other three Australian mound-builders forming the family of *Megapodiidae*, and which exist in more humid zones situated in the Torresian region. If we seek for the main cause that restricts the Mallee-Fowl to its present southern habitats, of which the Mallee type of that country itself is the main stronghold, it will probably be found that originally this bird, when not so highly specialized, and when in its more primitive state of development, and not being so far removed from its reptilian ancestors as we find it to-day, frequented the sands of the shores

of the ancient inland lakes, or rather some vast inland sea, which, as the continent of Australia became uplifted, drained away in many directions in the shape of streams, which spread out and deposited their sandy scour in all directions as they rushed to lower levels. Thus it is that we find the sand distributed throughout the Mallee at the present day. The ancestors of the *Lipoa* of those ancient times gradually metamorphosed and adapted themselves to the altered conditions of their environment, and so we find them inhabiting sandy tracts of country, or places where the soil is loose and friable. This is a necessary concomitant in their breeding habits, as will be shown later on. We also find a counterpart of this peculiarity in the nesting habits of another genera of the *Megapodiidae*. Unlike other birds, which incubate their eggs by sitting and brooding on them, the *Lipoa* builds no nest in which to brood, but instead forms a nesting mound in which the eggs are hatched out by heat, which the birds, with truly wonderful forethought, create artificially, assisted as well by the genial warmth of the sun, which the birds, in the choice of a site on which to build their mound, arrange to fall upon it.

**MOUND, AND RISE OF MOUND-BUILDING HABIT.**—How did the *Lipoa* become possessed of the intelligence which enables it to build such vast natural incubators with which to hatch out its eggs? Whence comes this bird's extraordinary knowledge of the chemistry of fermentation, and that heat artificially engendered thereby will incubate their eggs? How did these birds ascertain that by building a huge oven, as it were, of earth and sand, and by placing leaves, twigs, and other vegetable rubbish in its centre, and by covering it in when the material had been damped by rain and dew, a perfect hot-bed would be made whereby their eggs would be hatched out by the resultant heat? Why does the *Lipoa* regulate the heat of the mound? How did it know that it was necessary to do so? What part of the bird's organism acts as a thermometer, indicating and conveying to it the intelligence that the temperature of the interior of the mound is high enough to successfully incubate their eggs? When we remember that the heat supplied by nearly all the other species of birds for the incubation of their eggs is adventitious, depending principally on the warmth radiated by the parent's body, the temperature of which they do not regulate to any great extent, then the wonderful and complicated methods of forming a breeding-pit adopted by the *Lipoa* to hatch out its eggs arrests one's attention, and its mound-building habit is prominently brought before us as one of the greatest wonders to be found in the life-history of birds. All these complicated questions I hope to examine in this paper. When we search for the reason that induced the *Lipoa* to make a nesting mound to incubate its eggs, we must look to the past

and study the evolutionary processes that have, perhaps for centuries past, given rise to this elaborate and complicated system of incubation adopted by the Lipoa. We have evidences that birds have evolved from reptiles, that presumed laid oblong or round white eggs, which they at first deposited haphazard in exposed positions on the surface of the ground. Being conspicuous objects on account of their colour, the eggs were readily preyed upon by enemies, until accidentally perhaps some reptile placed its eggs in a less conspicuous place than usual, and it so happened that it noticed that its eggs were not molested by their usual enemies. Then, having gained the knowledge of the value of protecting its eggs, it repeated the act of purposively hiding them, gaining greater skill and more precise methods each time, and so the habit of covering over or depositing its eggs under bark or stones, or shielding them by covering them over with *débris*, gradually developed. The covering-up process was thus handed down. As time went on, and as the families split up from the parent stock, they carried this habit with them, each adding some newer or more cunning, more complete or better considered innovation, rendered all the more necessary by the greater degree of skill acquired by their enemies, whose powers of keener observation were being evolved in the same ratio with them. Then those that added newer and more specialized methods of hiding their eggs survived, whilst those members of this branch that did not do so became extinct, or produced coloured eggs to secure some measure of protection—a question simply of the survival of the fittest, and the creation of the different species, aided by natural selection. We have a parallel case in the crocodiles of Australia, which creatures gradually found it necessary to bury their eggs, and afterwards to build mounds of mud to protect them, learning later on the value of placing vegetable material in the mound to generate more warmth to assist the solar heat in hatching their eggs, just as we find them doing in the tropical parts of Australia at the present time. Of recent years crocodiles have found it necessary to further protect their eggs from the depredations of wild pigs, aborigines, and other enemies, and I have often found the mother crocodile lying almost buried in a wallow, out of sight, alongside her egg-mound, as she kept guard. Then, continuing with the process of evolution from that branch of reptiles that evolved birds, from the study of which we find that our feathered friends are merely an extremely modified and aberrant reptilian type, or glorified reptiles—in other words, that the ancestors of birds were four-footed creatures which gradually metamorphosed into feathered bipeds, the fore legs becoming specialized, forming wings—then, when we take into consideration the fact that the contour of the eggs of the crocodile and the mound-

building birds have similar characteristics, and are the same shape, the apices or ends being of uniform size or nearly so, as well as the shell of the eggs of both being brittle, whereas formerly in the earliest reptiles they were soft-shelled, then we have evidences of a common origin and the rise of a mound-building habit on reptilian lines. This is especially noticeable when we know that the young of both the mound-building birds and the crocodiles are able to take care of themselves immediately after birth. Further evidence of this contention is to be found in that the *Lipoa* knows the value of maintaining a correct temperature in the mound so that its eggs will hatch out successfully. All the bird's energies are centred in this object—the pleasure of brooding is foreign to their nature. Their only anxiety is to regulate the temperature of the egg-chamber, as will be shown later on, as well as to protect their eggs in some degree from the depredations of their natural enemies. It is also significant that the *Lipoa* forms its mound in or near the dried-up bed of an inland sea or river basin, in the waters of which they once probably existed in their reptilian form, afterwards gradually metamorphosing with the physiographic change of their habitat when the inland sea or river-bed changed into dry land and became in course of time clothed with its present stunted growth. It is suggestive, too, that a member of the Megapode family (*M. brazieri*), inhabiting Savo, an island in the Solomon Group, still retains a more primitive and reptilian method of incubating its eggs. This bird simply digs a hole in the sand of the sea-shore wherein to deposit its eggs. Doubtless owing to its isolation, and thereby the relatively smaller proportion of the enemies of its eggs, this species has not been compelled to develop a more specialized method of incubation. Probably before the land bridge which joined these islands to the continent of Australia became broken, all the members of the family of *Megapodiidæ* shared a common and a similar method of incubating their eggs to that of *M. brazieri*. Although the *Lipoa*, as before stated, frequents mixed country, the exception proves the rule, since it is in the areas covered with sandy wash or silt created by the action of water that we find them most numerous. A probable ancestor of the mound-builders was the fossil bird *Chosornis præteritus*.

CHOOSING A SITE FOR NESTING MOUND.—In choosing a site for its nesting mound the *Lipoa*, in its Mallee habitat, usually selects an open space in the scrub with a break or opening to the north or east, so as to admit the sun's rays, which have so important an influence on the incubation. Bushmen that have become lost, and who are acquainted with this fact, are enabled to note the points of the compass approximately when they happen on a mound in the scrub. On the opposite side of the mound the scrub is usually dense, and offers protection

against the windy weather that blows from those quarters. As the outer covering of the mounds in Mallee country is composed chiefly of sand, this breakwind prevents the undue displacement of the superimposed material. The choosing of a site where the rays of the sun can fall upon the mound and warm it, as well as the selection of a place where the mound is protected by a breakwind, together with the circular style of architecture of the mound, which renders it less liable to damage by wind, emphasizes the truly marvellous knowledge of the laws of physics possessed by the Mallee-Hens. Although the mounds are constructed as a rule in these sites in the Mallee, yet I have examined a mound which had been built in the centre of a patch of scrub, the stems of which stuck up through the mound in all directions, whilst the leaves of the Mallee scrub overhead shielded the mound to a certain extent from the sun's rays. Within the egg-chamber of this mound, however, there was a greater supply of decomposing vegetable matter, to create greater heat. Mr. Charles M'Lennan, better known as "Mallee-Bird," who has had over 20 years' experience of the ways of the Lipoa, and who has greatly assisted me in my investigations of the life-history of these birds, informs me that he has found the Lowans utilizing the heaps of sand thrown out of a rabbit warren for building their mound, which they had erected in the centre of the burrows, thereby saving a large amount of toil, which represented a fortnight's work for the birds. In other districts, outside the Mallee area, which the Lipoa frequents, and which is closed with scrub, the birds choose sites in accordance with the above conditions as far as possible. Many mounds are found in the troughs between the sand-dunes in the Mallee or in depressions in these arid places, yet there are many exceptions to this rule. The theory that the mounds are placed in these depressions so as to get a greater supply of moisture to aid in the fermentative action does not apparently hold good. The mounds are placed in these sites for protection from the wind, as well as to obtain the advantage of the higher and more even temperature prevailing in these miniature valleys.

STRUCTURE AND MATERIAL OF MOUND.—The foundation of the mound of the Lipoa, which is the smallest structure of all the Australian mould-builders, is formed by first scratching out a circular depression in the ground about 2 feet wide and 1 foot deep. The sand or gravel is next scraped up and placed around this circular hollow, and so the outside wall of the nesting mound is formed. When completed the height of the mound ranges from 2 ft. 6 in. to 3 ft. 6 in., with a diameter at the base of between 12 feet and 18 feet. The size of the mounds varies from 110 cubic feet of material to 200 cubic feet. Only a pair of birds works at the same mound, and into the concavity, which now has the appearance of the crater of a miniature volcano,



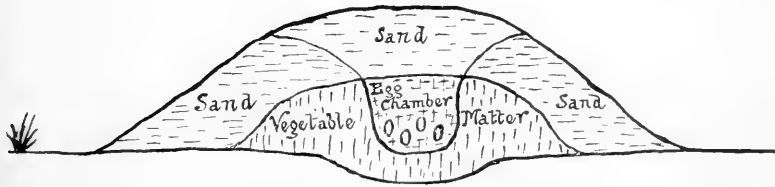
they scrape leaves, vegetable matter, brambles, bits of bark, and small branches, and heap it up in a circular fashion to a height of from 18 inches to 2 feet. The material is raked and swept up by the birds from every convenient direction around the mound, and is often brought a distance of 40 or 50 yards. The manner in which they sweep up this *débris* with their wings and breast, and also rake it, as it were, with their powerful legs, and the clean appearance which the ground afterwards presents, gives an impression that some gardener had been cleaning up the garden with a fine-toothed rake. The wings of the bird are much worn by this sweeping. The vegetable material in the centre of the now saucer-shaped mound is left for about four or five months uncovered, during which time it usually receives a good soaking by the winter rains, which causes decomposition to set up and change it into a regular hot-bed. That the *Lipoa* prepares the mound months ahead of the egg-laying period is a remarkable trait in this bird's character, evidencing the knowledge possessed by it of the seasonal changes as well as the physical requirements necessary to set in motion the fermentative action. Six to nine days before the hen commences to lay, the egg-chamber is formed in the centre of all this vegetable matter. A hole ranging from 14 inches to 20 inches in diameter and 18 inches to 2 feet in depth is scratched out by the female. The sides of the hole forming the egg-chamber are usually hard and well defined, consisting as they do of interlaced sticks matted together with leaves and twigs. This condition of the walls of the chamber has an important bearing on the future welfare of the eggs. In the first place, the foundation and inner walls of the mound being solid and laced together, so to speak, prevent the displacement of the whole mass, which would crush the eggs were it to start moving in any given direction, whilst the eggs would be liable to be broken if subjected to the compression of such an enormous weight of sand, which is of such an unstable nature, and out of which the *Lipoa* forms its mound, heaping it high above its eggs. The forming of the egg-chamber occupies the bird for about one and a half hours' duration. The vegetable *débris* broken out by the formation of the egg-chamber is placed back into the hole the same day, and, being mixed with sand, becomes more friable and loose. The mound is then heaped up into a pyramidal form, and after six to nine days have elapsed the female opens out the egg-chamber and deposits her egg. To construct a new mound and prepare it for the formation of the egg-chamber occupies the pair of *Lowans* from 25 to 33 days. The birds work at the building of the mound only early in the morning for about four hours, and again late in the afternoon for a short time. On moonlight nights Mr. M'Lennan has seen them working for a few hours. The energy displayed by these birds in making their mounds is truly marvellous, whilst the

labour entailed in scraping and gathering together the enormous quantity of material which forms it is prodigious. But what is still more astonishing is the amount of labour which devolves upon the female bird every time she lays a fresh egg, since she has to scratch out the egg-chamber and refill it each time, and as she lays in ordinary seasons about 14 eggs, she has to reopen and refill it 14 times. This reopening and refilling, together with the necessity of repeatedly opening up and refilling the egg-chamber after the bird has ceased laying, so as to keep the material around the eggs loose, whereby sufficient oxygen can be supplied to the embryo in the egg, is a further cause of wonderment. The time occupied by the bird in cleaning out the egg-chamber and preparing it to receive the egg and refilling it again after depositing her egg, is from three-quarters of an hour to an hour. Occasionally the male assists the hen to open out the mound. About 9 o'clock a.m. the Mallee-Hen visits her mound, and between that hour and 10 a.m. she lays her egg. The same mound is not used every year by its original architects, since the *Lipoa* does not breed every season. In Victoria during the month of April and May the birds usually start to dig out the old mound or else construct a new one. The date of commencement varies according to the season and locality, but the governing factor is the rainfall, on which the *Lipoa* is dependent for the moisture to soak the vegetable material of the egg-chamber, as well as for the subsequent food supply. During periods of drought egg-laying is suspended, and although a season may have started propitiously, yet should a dry atmospheric condition manifest itself, the *Lipoa* leaves off depositing its eggs, influenced, no doubt, by the change wrought in the food supply as well as by the condition of the vegetable material of the egg-chamber, which, owing to the extreme dryness of the air, has become so devoid of moisture that it probably would not set up sufficient heat to incubate its eggs with any degree of certainty owing to the fermentation being arrested. During the greater part of the time of incubation the heat of the egg-chamber is many degrees greater than the surrounding atmosphere, and ranges from 90 to 97 degrees Fahrenheit, whilst the external covering of sand on the mound often becomes so hot from the heat of the sun's rays that it is extremely painful for a person to recline on it. When starting to open up the mound to deposit its eggs the bird scratches out a channel all around the exterior of the summit of the mound about a foot from the top. (See illustration.) Over the outer edge of this the birds scrape the material resting on top of the egg-chamber, and when this has been removed the mound presents the appearance of a miniature volcano or funnel. Usually in dull or wet weather the birds cap the peak of the mound with sticks placed crosswise in a careless



Lipoa's Egg-Mound  
(Showing first operation of opening by bird).

FROM A PHOTO. BY A. H. E. MATTINGLEY



Section of Lipoa's Egg-Mound.



litter, evidently to turn aside the water, which would percolate to the egg-chamber and interfere with the proper rate and progress of the fermentation, whilst the sticks would help materially to detract from the prominence of the sharp cone, and so make detection more difficult, as well as preventing the loose sand from being scattered by the wind. (See illustration.) Thus sticks on the mound are nearly always a sign that the birds have started to lay. On warm and sunny days the apex of the mound is removed and a concave opening made, so that the warmth of the sun's rays may penetrate and assist in the incubation.

## Descriptions of New or Rare Australian Birds' Eggs.

BY D. LE SOUEF, C.M.Z.S., &c., MELBOURNE.

### NINOX PENINSULARIS (Cape York Owl).

(Mathews, Handl. Bds. of Austr., No. 290.)

This fine bird seems to be principally found in the Cape York district. A set of two eggs was found on 4th January, 1907, in a hollow of a eucalyptus tree, the egg being deposited on the decomposed wood at the bottom, mixed with the small bone remains of birds and small mammals, probably mice. The hollow had evidently been used for some time. The eggs are the usual round type of Owls', and are glossy, smooth, and measure—(a) 1.82 x 1.48, (b) 1.81 x 1.56 inches. The locality was not far from Somerset, Cape York, Northern Australia.

### ÆGOTHELES RUFÆ (Rufous Owlet Nightjar).

(Mathews, Handl. Bds. of Austr., No. 380.)

A clutch of three of the eggs of this bird was found in a hollow of a eucalyptus tree near Derby on 15th November, 1906. They are pure white, with a roughened surface, and are indistinguishable from those of *Ægotheles novæ-hollandiæ*. They measure—(a) 1.12 x .90, (b) 1.11 x .87, (c) 1.14 x .88 inches.

### COLLYRIOCINCLA WOODWARDI (Woodward Shrike-Thrush).

(Mathews, Handl. Bds. of Austr., No. 641.)

A clutch of three eggs of this bird was found near Port Darwin, 22nd January, 1907. They are white, well freckled with small markings of umber, the markings being most plentiful at the larger end; but, as in the other members of this family, there is much variation in the markings of different clutches. They measure—(a) 1.02 x .78, (b) 1.04 x .76, (c) 1.03 x .77 inches. The nest, composed of light twigs and leaves, was built in an open cavity in the trunk of a dead tree.

### PINAROLESTES BOWERI (Bower Shrike-Thrush).

(Mathews, Handl. Bds. of Austr., No. 645.)

The eggs of this species are a very pale cream colour, irregularly blotched with dark reddish-brown markings, more plentiful on the

larger end. They measure—(a) .92 x .72, (b) .96 x .73 inch. The compact nest, composed of fine rootlets and tendrils, was built in a pandanus palm, near the crown, about 8 feet from the ground, and was found on 2nd December, 1906, near Cairns, Queensland.

COLLYRIOCINCLA CERVINIVENTRIS\* (Fawn-breasted Shrike-Thrush).  
(Mathews, Handl. Bds. of Austr., No. 642.)

The nest of this Shrike-Thrush was found in the top of a broken sapling, and was composed of twigs and leaves, being lined with rootlets. The two eggs are white, thickly freckled with light brownish-red, the smaller markings being more numerous than the larger ones. They measure—(a) 1.06 x .76, (b) 1.02 x .76 inches. The nest was found near Springsure, in Queensland, on 28th October, 1904.

CRATICUS ARGENTEUS (Silver-backed Butcher-Bird).  
(Mathews, Handl. Bds. of Austr., No. 657.)

The nest of this Butcher-Bird, containing three eggs, was found on 25th February, 1906, in a small tree a few miles to the east of Pine Creek railway station, Northern Territory. The bird was flushed from the nest, which was situated in a forked branch about 20 feet from the ground, and was composed of twigs and lined with fine rootlets. The eggs are pale greyish-green, with spots of burnt sienna, slightly more numerous at the larger end, and they measure—(a) 1.22 x .78, (b) 1.28 x .84, (c) 1.24 x .86 inches.

CRATICUS SPALDINGI (Spalding Butcher-Bird).  
(Mathews, Handl. Bds. of Austr., No. 652.)

The open nest of this bird was found near Port Darwin on 23rd November, 1905; it was rather loosely built of twigs and rootlets, and situated about 20 feet from the ground. The three eggs in the nest were fresh, and are of a greyish-green, with a few markings on the larger end of a dark brown, some markings under the surface being of brownish-purple. They are very similar to some specimens of the eggs of *Craticus rufescens*, but smaller. They measure—(a) 1.27 x .98, (b) 1.21 x .95, (c) 1.28 x .95 inches.

GYMNORHINA LONGIROSTRIS (Long-billed Magpie).  
(Mathews, Handl. Bds. of Austr., No. 648.)

This variety is found in North-Western Australia. A nest containing five eggs was found on 3rd December, 1906, near Derby. The nest was built in a eucalyptus tree, composed of sticks, and constructed after the usual style of the *Gymnorhina*. The eggs are light greenish-grey, thickly marked with faint greenish irregular, smudgy lines, and with a few large blotches of dark brown. They measure—(a) 1.55 x 1.02, (b) 1.54 x 1.01, (c) 1.61 x 1.05, (d) 1.51 x 1.01, (e) 1.53 x 1.06 inches.

\* The author of this species (A. J. North) now regards it as only a "climatic form" of *C. rufigaster*.—Vide "Nests and Eggs of Birds," &c., p. 100.—EDS.

**MALURUS CORONATUS** (Purple-crowned Wren).

(Mathews, Handl. Bds. of Austr., No. 606.)

The dome-shaped nest of this beautiful little bird was found near Port Darwin\* on 25th January, 1905; it was situated in some thick vegetation, about 2 feet from the ground. It contained three eggs, which are white, with small reddish-brown markings, those on the thicker end being larger and more numerous. The eggs measure—(a) .59 x .42, (b) .58 x .43, (c) .56 x .41 inch.

**CINCLOSOMA CASTANOTHORAX** (Chestnut-breasted Ground-Bird).

(Mathews, Handl. Bds. of Austr., No. 518.)

A nest of this bird was found by Mr. Herman Lau on 3rd November, 1879, in the Darling Downs district in Queensland. He flushed the bird from its nest, which was on the ground, but did not secure it. He states that the open nest was loosely built of leaves, twigs, and coarse grass, and situated alongside a fallen log by a tussock of grass, and the bird sat very close. The eggs are slightly glossy, and white, freckled with purplish-black and brownish markings, especially on the larger end; the under purple markings are larger than the surface ones, and are also more numerous at the larger end. The eggs measure—(a) 1.18 x .92, (b) 1.14 x .90 inches.

[These specimens were overlooked until recently, when I was rearranging my cabinets.—D. LE S.]

**HALCYON WESTRALASIANUS** (Western Sacred Kingfisher).

(Mathews, Handl. Bds. of Austr., No. 392.)

This bird is easily recognized from *H. sanctus*. It also has a slightly different note. A clutch of three eggs was found in a hole in a decayed hole of a eucalyptus tree on 5th December, 1898; they are pure white, slightly glossy, and measure—(a) .96 x .85, (b) .98 x .86, (c) .98 x .85 inch.

**HALCYON SORDIDUS** (Mangrove Kingfisher).

(Mathews, Handl. Bds. of Austr., No. 394.)

These birds are fairly plentiful in Northern Australia. A clutch of five eggs was found in a hole drilled into a termites' mound, situated in the fork of a tree about 30 feet from the ground, 12th December, 1906. The eggs are pure white, glossy, and measure—(a) 1.04 x .87, (b) 1.02 x .85, (c) .98 x .84, (d) 1.04 x .87, (e) 1.04 x .88 inches.

**PLATYCERCUS NIGRESCENS** (Campbell Parrakeet).

(Mathews, Handl. Bds. of Austr., No. 335.)

A clutch of three eggs of this species of Parrakeet was found near Cairns on the 24th of November, 1907, in a hollow in a large tree in a patch of open forest country. The eggs were fresh, and therefore not nest-stained, and the clutch was probably incomplete. They are pure white, slightly glossy, and measure—(a) 1.11 x .91, (b) 1.10 x .89, (c) 1.10 x .86 inches.

\* Northern Territory has not been previously recorded for this species.—EDS.

## Notes on Some Birds of the Abrolhos Islands (W.A.)

BY CHAS. G. GIBSON, PERTH.

THE following few brief notes on some birds found breeding on the Abrolhos Islands, W.A., may prove of interest.

The notes were made during a short trip to the Islands between the 9th and 19th of November last. The trip was to a certain extent marred by bad weather, mild southerly gales being experienced during the whole of the time, and these prevented us from getting about the islands as we had wished. Some notes on this trip by Mr. A. W. Milligan have appeared in *The West Australian* newspaper.

The Islands consist in the main of three groups—Pelsart, Easter, and Wallabi—these being separated by 10 or 12 miles of open water. Pelsart Group is the most southerly, and Wallabi the northern. The following islands were visited, viz.:—Pelsart (Pelsart Group), Wooded Island, Rat Island (Easter Group), East Wallabi and Pigeon Islands (Wallabi Group).

The following is a list of the birds noted breeding on the various islands:—

White-bellied Sea-Eagle (*Haliaeetus leucogaster*) had almost finished breeding. About eight nests were noted, several with two large young almost able to fly, and others that the young birds had apparently just left. Nests built as a rule on the rocky promontories, and close to the water. Noted only on the Wallabis.

Osprey (*Pandion leucocephalus*) had almost finished breeding. Nests noted on almost every island, and containing young in all stages, from just hatched to almost able to fly. Several nests also noted that the young had just left. No nests with eggs were seen. Nests built on the coral heaps anywhere on the islands.

Pelican (*Pelecanus conspicillatus*).—These birds were not personally noted breeding, but I was informed (on reliable authority) that there was a small colony of them breeding on the west end of West Wallabi Island, in company with the Pied Cormorants (*Phalacrocorax hypoleucus*). My informant told me that the Pelicans did not build their own nests, but simply took possession of suitable ones of Cormorants and laid two eggs therein. On our return to Geraldton I was presented with a pair of eggs taken from this rookery in October, 1907. There were said to be eight to a dozen pairs breeding.

Pied Cormorant (*Phalacrocorax hypoleucus*).—A small colony of these was noted breeding on Lagoon Island (Wallabi Group). We were unable to land on this island, however, and so could not note the contents of the nests, but the birds appeared to be sitting on eggs or small young. There was also said to be a large colony breeding on West Wallabi.

Pacific Gull (*Gabianus pacificus*).—These had practically finished breeding. Several pairs of old birds were noted with their young (two) "at heel." They were not plentiful.

Silver Gull (*Larus novæ-hollandiæ*).—Only one small colony was





Noddies Nesting, Pelsart Island, Abrolhos.

FROM A PHOTO. BY C. P. CONIGRAVE.







Group of nesting Noddies, Rat Island, Abrolhos.

noted breeding, but young birds were common; breeding was apparently almost over. The nests noted (on Rat Island, Easter Group) contained eggs or young birds.

Allied Petrel (*Puffinus assimilis*).—Noted on several of the islands, principally on Wooded Island; had practically finished breeding, as numerous almost full-grown young were found in the burrows, but no eggs or small young.

Wedge-tailed Petrel (*Puffinus chlororhynchus*).—Principal colonies were on Pelsart, Rat, and West Wallabi Islands. On Rat Island freshly cleaned-out burrows were noted on 12th November, but no eggs; on 19th November this island was again visited, and almost every burrow contained a fresh egg. Eggs were also first noted on Pelsart Island about this date. Large colonies on each of the above islands.

Red-capped Dottrel (*Ægialitis ruficapilla*).—Fairly common; had finished breeding; numerous young birds noted.

Tropic-Birds (*Phaeton*).—Both the Red-tailed and the White-tailed Tropic-Birds have been recorded as seen on these islands, but we did not note any. The fisherman state that it is several years since any have been seen. They used to frequent the Wallabi Group principally.

Caspian Tern (*Hydroprogne caspia*).—Only a few pairs were noted. Breeding was apparently over, as most of the old birds had young (two) "at heel."

Crested Tern (*Sterna bergii*).—Noted principally on Pelsart and Wooded Islands; were in large numbers, but apparently had not started to breed.

Roseate Tern (*Sterna gracilis*).—Noted principally on Pelsart Island, where there was a large colony of them; had not started to lay in November, but I was informed afterwards that they bred in large numbers on Pelsart Island early in December.\*

White-faced Ternlet (*Sterna nereis*).—Fairly common, principally on Pelsart Island, where a large colony was just commencing to lay on 10th November, several fresh eggs being taken on that date.

Sooty Tern (*Sterna fuliginosa*).—The principal colonies were on Pelsart Island and Rat Island. Hundreds of thousands were in full laying season on Pelsart on 10th November, but the principal breeding island was Rat Island. Here the birds were breeding in countless numbers, laying being in full swing on 14th November. Only one nest was recorded containing more than one egg, it containing a pair.

Noddy Tern (*Anous stolidus*).—Also breeding, principally on Pelsart and Rat Islands, especially the latter, where they were laying in hundreds of thousands, in company with the "Sooties." Nesting was in full swing on 14th November on the latter island, most nests containing eggs—or, rather, an egg—as only one nest was noted with two eggs.

\* See also "Nests and Eggs" (Campbell), p. 835.

Lesser Noddy Tern (*Micranous tenuirostris*).—Only one colony was noted, that being on Wooded Island. Here, again, hundreds of thousands of birds were breeding in a mangrove thicket. Each nest contained a single egg or a small young one. Most of the eggs were heavily incubated, laying evidently having commenced a couple of weeks previously (to 12th November). The “Ternery” reported by A. J. Campbell in “Nests and Eggs,” p. 856, and visited by him, on Pelsart Island, has been abandoned for several years past, the birds having all left for Wooded Island.

Panayan Tern (*Sterna anæsthera*).—A few of these Terns were noted on Pelsart Island, breeding in the open, in company with the “Sooties.”

Green-backed Silver-eye (*Zosterops gouldi*).—Common on all the larger islands; had apparently finished breeding.

Spotted Scrub-Wren (*Sericornis maculata*).—Very common on East Wallabi (the largest island of the group); possibly also on West Wallabi. Not noted elsewhere. Had apparently finished breeding.

Brush Bronze-wing (*Phaps elegans*).—Noted only on East Wallabi; possibly also on West Wallabi. Very plentiful. Breeding apparently over.

Spotless Crake (*Porzana tabuensis*).—Only one pair of these birds was noted, these being seen on a rocky islet forming part of Rat Island. This record for these birds is, I think, somewhat unique.

Painted Quail (*Turnix varia*).—These birds were noted in large numbers on the Wallabis only. They had apparently finished breeding, as numerous young birds were noted, but no nests or eggs.

Oyster-catchers (*Haematopus longirostris* and *H. unicolor*).—Both these birds were observed along the beaches on most of the islands, usually in companies of three to seven. Both species were seen together. They did not appear to have commenced breeding.

Reef-Heron (*Demigretta sacra*).—Odd birds of this species were noted, chiefly on the Wallabi Group. They did not appear to be breeding.

The list does not profess to be a complete one of all the birds breeding on these islands, especially with regard to the Petrels. Waders of different kinds were common on all the beaches, but it was regretted that no special attention could be paid to them.

## Birds at Essendon.

BY H. STUART DOVE, F.Z.S., MOONEE PONDS, VICT.

THIS district, with its hills and dales, its river frontage and pond life, its belts of evergreen trees and numerous shrubberies, is the home of, or is visited by, many interesting birds, although so near the heart of the great city. Some, such as the Heron and Dottrel, may be seen once or twice, then depart to other feeding-grounds; others, like the Reed-Warbler, come down from the



Lesser Noddies Nesting in Mangroves, Wooded Island, Abrolhos.





north in springtime, stay with us during the warm months, then go north again to more genial winter climes ; still others, such as the "Greenie" Honey-eater and the Blue Wren, we have, like the poor, always with us.

The Reed-Warbler (*Acrocephalus australis*, Gould), which makes its home in the thick vegetation surrounding the ponds, is a very plain brown and grey individual, but its sweet notes more than atone for any lack of gay colours in its plumage ; in fact, we may well call it the Nightingale of the South. Besides chanting at frequent intervals during the day, it may be heard also on warm evenings long after dark. The nest, like a deep cup in shape, is usually bound to the stems of three or four tall reeds at the height of a foot or two above the water-line, and the brown-blotched and spotted eggs repose on a soft lining at the bottom of this cup in perfect safety, whatever gale may blow across the water. Such a situation among the reeds is chosen in ninety-nine cases out of a hundred, but the exception came to light when I was searching some shrubs by the water-side, and found a Reed-Warbler's home perched up in a fork 8 feet from the ground in the imported bush *Sparmannia africana* ; the nest contained three fresh eggs. Never before or since have I seen the Warbler's home in such an elevated position, all others in the locality being placed only a foot or two above the water among the reed-stems.

Our handsome and useful ally, the Magpie-Lark (*Grallina picata*, Lath.), is very much on the increase in this district. During the summer of 1906 I found the queer mud nests, two in number, shaped like saucepans without handles, placed on horizontal branches of the weeping-willow within a few yards of each other. During the present autumn between twenty and thirty individuals could be seen each evening winging their way to roost in the same locality where the nests had been, after spending the day feeding in moist places.

The White-backed Magpie (*Gymnorhina leuconota*, Gould), may be seen in small companies in the fields hereabouts, engaged in its useful task of assisting the farmer to keep in check his insect foes. The tameness of this handsome forager, and his delightful flute-like notes, make him a general favourite. No Hawk, and very few other birds, are allowed about the domain which a pair of Magpies has chosen for a home, and it is most amusing to watch the pertinacity with which this self-constituted constable will chase away intruders, endeavouring always to rise above the foe and strike downwards at his back. He is always successful in intimidating these trespassers upon his domain, even when they are Hawks twice his size, and by his pluck and pertinacity soon puts them at a safe distance from his home.

Several times during the summer of 1906-7 did I see the

Sacred Kingfisher (*Halcyon sanctus*, Vig. and Hors.) about Essendon, and heard its clear, penetrating call. In all probability it reared its young not far away, for there are still, I am glad to say, many of the original gum-trees remaining, in the hollows of which it could lay its round, pearly eggs.

The Pipit (*Anthus australis*, Vig. and Hors.), more commonly known as Ground-Lark, is very plentiful on the grassy hills about the Maribyrnong River; in fact, they may be seen in almost any grass-paddock, and even about the roadsides of the district. Although it is known that the bulk of these birds make a long autumn flight to the north-west of Australia and regions beyond,\* yet plenty of them stay with us all the winter, and pick up a good living from the ground, judging by their plump condition. They will make little, short runs in front of you, and do not like to take the trouble of flying unless you press them, when they will make a short flight and again alight.

We have three Robins here—the Scarlet-breasted, the Flame-breasted, and the Red-capped. Of the latter (*Petroica goodenovii*, Vig. and Hors.), which is in some respects the most beautiful of the three, I have so far only come across a single pair, and that was quite recently, at the edge of a grove of pines near the Maribyrnong River. The male bird was in fine plumage, and exhibited great confidence in my intentions, allowing a close inspection without betraying any fear; needless to say, this confidence was not abused. The breast, also the front and crown of the head, were bright red, remainder of head black, as was the throat; the back and wings were also black, with a broad white stripe upon the latter. This pleasing contrast of colours, with the clean build and general air of alertness, make this species very engaging to look upon, and I am hoping to renew the acquaintance as spring progresses, if the pair stays here to build. The female is quite plain, with none of the brilliant tints of her mate, nor does she exhibit the same confidence in the human being; in the case above cited, she immediately withdrew on my approach, nor did she again make her appearance.

The Scarlet-breasted (*Petroica leggii*, Sharpe) is very similar to the Red-capped, but the black head has a large white spot upon the front; there is no red except upon the breast; the throat and wings are similar to the last, but the female, when mature, has a dash of red upon the breast, much fainter in tone and less in quantity than that of the male. I have noticed that this species keeps in pairs all through the winter months, while the next, the Flame-breasted (*Petroica phanicea*, Gould), flocks after the nesting season is over, and remains thus in companies

\* Apart from a reference in "Nature Studies in Australia" (Gillies and Hall), p. 12, this assertion has not been supported.—EDS.

until housekeeping begins again. It is a beautiful sight to see a dozen or twenty of these feathered gems congregated in a small paddock during autumn or winter, their breasts glowing like so many live coals. The red is of a different quality from that of the Scarlet-breasted, and seems to glow with life, like that wonderful tint one gets in a fine opal. The hen, strange to say, has no red at all upon the breast, like that of the preceding species, but is a plain little grey bird, and the young males resemble her, for they do not enter into the delights of full plumage until their second spring season. Thus, when one comes upon a party of Flame-breasts feeding in autumn or winter, the brilliantly-coloured individuals are quite in a minority, by far the larger number being in plain grey; yet so glowing is the tint upon the mature males that these attract one's notice instantly, while their sober-looking relatives are comparatively unheeded.

The Yellow-breasted Robin (*Eopsaltria australis*, Lath.), which is so plentiful in the tea-tree scrub about the shores of Hobson's Bay, I have not so far come across in this district. In Tasmania there is another Robin, called the Dusky (*Petroica vittata*, Q. and G.), about the same size and build as the Yellow-breast, but without its colour. A friend and myself, when on a bush trip in the island across the Strait, had a most interesting experience with this bird. We had, during our tramp, emerged in a clearing, on one side of which stood a tall charred stump, once a gum-tree. As we approached we were amazed to see a Dusky Robin come fluttering down the side of the stump, and then lie twisting about at the foot thereof, apparently in all the agonies of dissolution. We had heard no shot from the mischievous pea-rifle, nor seen any Hawk or Butcher-Bird near, so could not account for the poor bird's dying condition. As we walked up to investigate she fluttered very feebly for a short distance, then lay still; we advanced a step or two, still she fluttered just out of reach. A few repetitions of this performance, then the truth flashed upon us. Her nest was in a niche in the side of the old stump, her disablement just a clever bit of acting, which would have done credit to the heroine of a tragic drama, but was to our feathered actress really a matter of life or death, for she was luring us away from what was to her the most precious thing on earth. Many crafty birds practice similar delusive tactics upon the simple human being, but this trait in the Dusky Robin was new to us, and was exhibited in such perfection that we could but marvel at such a large amount of guile in so small a body.

During the first week of July, while standing in the vicinity of the lily pond in Queen's Park, which Mr. Oliver's fostering care has rendered so attractive, I was much interested in hearing a familiar note proceeding from a reedy island in the pond; it was a note which I had not heard since leaving the banks of the

Tamar about eight months ago, and I knew it to be that of the Grass-Bird (*Megalurus gramineus*, Gould), usually frequenting clumps of reeds and rushes by a riverside or in wet pastures and swamps, but very unusual in a park close to the main road and frequented daily by numbers of people. This just bears out good old White of Selborne's dictum of over a century ago, that that district always turns out to be the richest in natural productions which is the most searched, and we have only to keep eyes and ears open to come upon interesting things in most unlikely places. So it was in this case. By concealing myself as much as possible and continually imitating the weird, penetrating call which arose from the thicket of reeds, I was presently able to draw the shy little fellow up fairly close to me and obtain a good view of him. Not very striking in appearance: the back marked much like that of a sparrow, under side grey with dark streaks upon the breast, tail rather long and somewhat elevated; no brilliant hues to attract the eye, but still most interesting to the naturalist from its shy nature and recluse mode of life. Scores of folk dwelling near rivers and swamps must be familiar with the weird call of the Grass-Bird and yet have never seen the little recluse, so closely does he conceal himself amid the dense vegetation in which he makes a home.

Of the Honey-eater family, the familiar White-plumed (*Ptilotis penicillata*, Gould), or "Greenie," is, of course, the most numerous, its lively notes and rapid motions making it very conspicuous. Numbers are always to be seen and heard amid the group of graceful gums on the eastern side of the Park, a portion which has been very wisely left as far as possible in its natural state, and forming one of the most delightful spots in this reserve.

Another Honey-eater, the Spiny-cheeked (*Acanthogenys ruficularis*, Gould), is far less generally known than the "Greenie," but is quite numerous just now in the Park and in many of the gardens of the district. It derives its name from a whitish bristly patch just behind the eyes. But to my mind the notes uttered by this species form its most remarkable feature. The tone reminds one of a gate creaking on its hinges, and the bird while calling elevates its head and beak almost perpendicularly, reminding one of the attitude adopted by the familiar Shrike-Thrush (*Collyriocincla harmonica*, Lath.) when challenging a rival.

This native Thrush is also to be seen the Park, although its numbers are exceedingly small when compared with those of the imported Song-Thrush, which, with the Blackbird, may be seen on every lawn and in almost every bush; still, the fine, bold, cheerful notes of the Australian bird make it a welcome resident. On awaking early in the bush on a fine spring morning it is most inspiring to hear a number of these bold warriors whistling against each other, and making the forest resound with their melodious challenges.

Casual visitors to the lake in Queen's Park are Black Duck (*Anas superciliosa*, Gm.), White-fronted Herons (*Notophoxyx novæ-hollandiæ*, Lath.), and Australian Dottrel (*Peltohyas australis*, Gould).\* A pair of the latter appeared for a few hours at the margin of the lake during the first week of May, and then, as with the Grass-Bird, disappeared, to be seen no more for a season. During part of last summer a friend and myself were staying at the country town of Avoca, and were much interested in watching the Dottrels, which are very numerous about the waterholes in that locality. This species is marked about the head and breast with black and white in strong contrast; yet, in spite of this apparently conspicuous colouration, when an individual alights at the edge of a pool after one of its short flights, it becomes practically invisible, and requires close attention to discover its whereabouts until it makes one of the quick little runs characteristic of its class. As an acute observer remarks:—"How they do the thing is a mystery; there is not a moment's hesitation, or searching for a spot—the bird appears simply to sink into the surroundings, and to become at will, for the time, part and parcel of them."

A few months ago a fine White-fronted Heron (*Notophoxyx novæ-hollandiæ*, Lath.) alighted at the edge of the lake, and would doubtless have stayed some time had it not been assailed by a pair of "Willie Wagtails" (*Rhipidura tricolor*, Vieill.), who have for some time been housekeeping in the Park, and consider themselves guardians of that domain. So fierce were their assaults upon the long-legged intruder that, after shifting his position several times to various parts of the lake shore, he was at length compelled ignominiously to take flight and seek more hospitable regions.

## The Black Cormorant in New Zealand.

BY EDGAR F. STEAD, CHRISTCHURCH (N.Z.)

I WISH to make a plea to your clemency on behalf of the Black Shag (*Phalacrocorax carbo*), a bird whose character is, in my opinion, nothing like as black as his plumage. And while I would be the last person to deny that the Shag does take trout, I am thoroughly convinced that he deserves much more consideration from anglers than he usually receives.

The chief point to which I would call attention is the indiscriminate slaughter of the Shags caused by the price that is put on their heads. On this account birds are killed which have been bred on the sea-coast, have lived in salt waters or estuaries, and have probably never even seen a small trout in all their lives. In many waters where there are both eels and trout the Shags

\*? Black-fronted Dottrel (*Ægialitis melanops*).—EDS.

do a great deal of good by their attacks upon the former. Some years ago I shot 19 Shags on the Lower Selwyn, and cut them open to see what each of them had in its stomach. Seventeen had eels, one had some small fresh-water crayfish, and one had a small trout about 7 inches long. Therefore, regarding even the bird that was eating crayfish as doing damage by taking trout food, the amount of good done by the 17 is out of all proportion to the damage done by the two. I do not think that the harm an eel can do trout is generally recognized. Being largely a bottom-feeding fish, it is an especial menace during the spawning season. A 2-lb. eel could easily eat all the spawn of a 5-lb. trout, and it is just the right fish to find it. Some time ago a 7-lb. eel was caught in our creek at Strowan. It had in its stomach one goldfish half digested and another quite whole, each of them weighing well over half a pound. I refer to this as an indication of the quantity that an eel can eat, for I do not think it would as easily catch trout as goldfish. But the damage done by eels in trout streams is not confined to their depredations among the trout themselves. Owing to their large appetites they eat enormous numbers of the small fish that would otherwise serve as food for the trout. This effect of the presence of eels may be likened to that of rabbits in sheep country.

The reasons for a Shag's preference for eels are many. Weight for weight an eel is more nourishing than a trout. But a Shag can with ease swallow a 1½-lb. eel, while it can only manage a 1-lb. trout with difficulty. That larger trout have been taken by Shags I am well aware, but as a general rule my remark holds good. The bird's method with an eel is to swallow it head first, getting about 4 inches of the fish into its stomach, the remainder being in its neck, fly to some convenient perch, and there sit throughout the process of digestion, letting the eel slide down gradually as it is digested. I remember once early in the morning standing below a Shag on a poloar branch at the Lower Selwyn and seeing about 2 inches of an eel's tail protruding from the bird's bill.

The Maoris, who were very observant field naturalists, have a legend about a battle between the land birds and the sea birds, which was brought about in the following manner:—

During a storm a sea Shag came into a lagoon for shelter, and there met a land Shag. Getting into conversation with the latter he asked what kind of fishing was to be had in the fresh water. "Very good," replied the land Shag, "dive and see!" The sea bird dived and brought an eel ashore. "Swallow it," said the land Shag. The other did so. "Now disgorge it." Gently but readily the eel slid out on to the sand. "That," said the land Shag, as he preened his plumage while his friend re-swallowed the eel, "that is the kind of fishing I have here." The storm having abated, the sea Shag said, "Now come with

me, and see what good fishing I have." Off together they went, and settled out at sea. "Fish," said the sea Shag. "No," replied the other, "I have come to watch you fish." Down went the sea Shag, and presently came up with a schnapper. "Swallow it," said the land bird. His acquaintance did so, taking the fish head first. "Now disgorge it." The sea Shag made the attempt, but the spiny dorsal fin of the fish stuck in his throat and he was choked to death. The onlooking sea birds realized from this incident that the land birds had better feeding grounds, and thus came about the battle between them.

The same objections as apply to the schnapper also apply in a lesser degree to trout as a form of diet.

The Black Shag breeds in colonies, usually in trees or on cliffs overhanging the water, but often at a considerable distance from its feeding grounds. The young do not, unless disturbed, leave the nest until they are well able to fly, which is about six weeks after they are hatched. During this period they are fed by regurgitation by both parents. At first this requires no special effort, the old birds delivering a small quantity of wholly digested food to the young. Gradually, however, as the offspring grow and their appetites increase, the old birds present their food in a less and less digested condition, at the last giving it up quite whole. Here is where the eel is most appreciated over the trout as a form of diet, the greater quantity which can be carried at a time and the marvellous ease with which it can be disgorged making it practically the staple nourishment of the young Shags in districts where it can be obtained. Nor is the presence of dead small trout in Shags' nests to be taken as a refutation of this argument, but rather in support of it. The old birds always swallow their prey head first. Thus a fish which is too long to be turned inside the bird has to be taken by the young bird tail first and swallowed that way. In the case of an eel this would make little or no difference, but with a trout it would, more especially if the parent, as it naturally desires to do, brings large fish to the nest. The result is that the fish, jamming in the young bird's throat, is rejected. As an example I would take the colony of Black Shags on the cliffs beyond Lake Forsyth. These birds largely use as their feeding ground Lakes Forsyth and Ellesmere. Arriving on the latter lake at the earliest streak of dawn, they immediately begin to fish in the shallows at the mouths of the streams that flow into it, or in the comparatively shallow water along the shores. Eels, common as they are throughout the whole lake, absolutely swarm in these particular places, and the relative number of eels to trout taken in these localities would be, I should think, at least 50 to 1. I may be wrong, but it seems to me that there are many more eels at the mouth of the Selwyn now than there were ten years ago when I first

fished there. At the same time there are unquestionably fewer Shags. In the shallows at the north-east corner of the lake, where I was shooting for some seasons, there were noticeably fewer eels than round the mouth of the Selwyn, and this I attribute largely to the presence of a flock of about 50 Shags which fished there.

In a colony of Shags on the Rakaia River, the old birds of which I several times watched fishing during their breeding season, I only saw two trout caught out of a total catch of about 12 fish, the remainder being eels. This was readily to be observed, as a Shag, being unable to swallow its prey under the water, has to bring it first to the surface.

And now I come to the actual taking of trout by Shags. As I have already said, in districts where there are eels the number of trout taken is smaller than is usually imagined; and there are very few streams in the South Island where eels are not plentiful. I remember well late in April, 1901, the Waimakariri being perfectly clear, I saw numbers of eels of all sizes working their way up stream under both White's bridge and the bridge over the cutting. In October, 1903, the Rakaia was crystal clear, and I saw the same thing at the railway bridge. At the same time there are, I believe, many streams in the North Island which are almost if not entirely devoid of eels. Yet even there I claim that the Shag is not an unmitigated evil.

Most persons will, I think, agree with me that the danger with many of our streams and rivers is not of their depletion of trout but of overstocking. Most of us also are well aware of the degeneration that takes place in any race that has no natural enemies—where, that is to say, there is no agent that will bring about the survival of the fittest. In the case of trout an eel can be of little use as such an agent, since by eating the ova it destroys the trout before the latter has had an opportunity of showing its fitness or otherwise. A Shag, on the other hand, taking trout of anything from 4 to 5 inches long, is almost certain to get the weaker members of a shoal of trout first, the stronger escaping by their superior agility and swimming powers. I suppose that of the trout in the Avon 10 per cent. are miserable, long, thin kelts, weighing anything up to a pound and a half. I think you would have great difficulty in finding any such percentage in a stream where there are Shags fishing, and it is my opinion that a few Shags fishing in the Avon would soon reduce this percentage there. The Upper Selwyn is enormously overstocked, considering the size of the stream and the amount of the food supply. The result is that the average size of the fish is nothing like what it was years ago, nor are they in such good condition. All sporting anglers would rather catch one fish of 3 lbs. than three of 1 lb. each, and even from a culinary point of view the former has the advantage over the latter of a greater weight of



edible meat. Therefore, in many of our streams a judicious thinning out of the fish is entirely to be desired, and, seeing the influence its food supply has on the size of a trout, I think that with three times the amount of food it would very shortly treble its weight. My grounds for this statement are the almost incredible increases in size of the trout in our big snow rivers immediately after the annual spring run of smelts and silveries.

I have heard that there is a marked deterioration both in size and condition of the fish in Lake Rotorua, which is generally ascribed to overstocking. The great danger that then exists is that some disease will break out and entirely deplete our overstocked streams and lakes; but to ensure that none but healthy fish will reach maturity a colony of Shags is exactly what is required.

Once when staying with Mr. George Rhodes at Meadow Bank I got up early and started down the Selwyn before daybreak. When it was just dawn I saw nine Shags settle in a pool and commence fishing. Within a few minutes a few more birds arrived, making 13 in all. I put down my rod and basket, and, creeping to the edge of the pool, I peered through the grass on the bank. The birds were all at the top end of the pool, diving in every direction. As I watched they came down stream towards me, quartering the pool very carefully. It was a most interesting sight, for they passed within a few yards of me, some diving, some swimming with head and neck under water. I could clearly see their bright-beaming green eyes, as they came up gasping, and follow their glistening bodies as they darted hither and thither under the surface. Down to the tail end of the pool they worked, and here at last one of them caught a fish, to be immediately set upon by several of the others, who, grunting and gurgling, tried unsuccessfully to rob him of his prey. I fancy it was a trout, though I did not see clearly. Then one of the birds saw me, and the whole flock rose and wheeled up stream. Three hours later, on my return journey past the pool, I counted the waves of eight or ten small trout as they rushed from the shallows into the deeper water. This I think shows that a Shag does not readily catch a healthy trout, but at the same time I feel sure that any eels or kelts in that pool would have been caught.

And now I will come to the question from a purely æsthetic point of view. With many fishermen the joy derived from a day's fishing is not to be gauged only by the bag they bring home, but also by the number of interesting incidents with which they meet during their tramp. The presence of bird life along a stream lends fishing a delightful charm for the angler, particularly if he is not getting over good sport. The little Dottrel running swiftly along the stones, pausing every now and

then to give its staccato call—"Pit-pit;" the Fantail performing all manner of aerial evolutions over the surface of the water while procuring its insect lunch; the long-legged Stilt trying by means of very realistic acting to lure us away from its nest or its young ones, secreted among the stones at the water's edge; the Duck, embodiment of maternal anxiety, leading her brood across some dark, willow-fringed pool—surely these things cannot fail to attract the attention and help to make for the day's pleasure. And even the old Shag, though perhaps possessed of no great ethereal beauty, is yet a very interesting feature of the landscape as he sits on some log or bough, with wings outspread, drying in the sun, or arises from the water at our approach with his body inclined at an angle, his whole appearance being much that of some fantastic creation on a Japanese screen. And year by year our bird life is decreasing—decreasing so rapidly, indeed, that before long much of it will have entirely disappeared, so that it behoves us to protect what of it we can while we may.

## Observations on the Cormorants along the Coast and in the Inland Waters of Victoria.

BY C. F. COLE.

### PART I.—INLAND WATERS.

SOME 12 years ago, while living in the north-east of this State, I had the opportunity of studying the habits of two species of Cormorants—viz., the Little Cormorant (*Phalacrocorax melanoleucus*, Vieill.) and Little Black Cormorant (*P. sulcirostris*, Brandt); also a most important thing now under discussion amongst naturalists and others—their diet. I, like most people, always thought that these birds lived solely upon a fish diet; but of this later on. These birds, when fishing, have to rely solely upon judgment and sight. For instance, if the fish are at a depth beyond what the impetus of the downward flight or dive makes these birds capable of diving to, they certainly escape them. Being heavy birds, they are adapted for this both in build and feather. Closely watching these birds while fishing, I always found that they seem to take the fish unawares, or else they wait for a shoal to come along, and then, diving in amongst them, nearly always succeed in catching one. If successful they rise to the surface immediately, but if not they swim some distance under water, most likely following their quarry, which nearly always escapes. Why? Because fish can swim faster than a Cormorant. I have seen one of these birds rise to the surface holding a fish close to the tail, and, owing to the fins, unable to swallow it; so, tossing the fish up into the

air, it dexterously caught it, while descending, by the head, and swallowed it with ease. My first experience of these birds eating other than a fish diet was brought about by gold-dredging near Bright, upon the Ovens River and tributaries. This dredging business caused the river water to become very muddy, but when the dredging stopped the river use to clear up in about 48 hours. While the water was dirty no Cormorants would be seen near the river, but upon all the lagoons in the vicinity. Some of the lagoons contained catfish, but others contained no fish life whatever, becoming almost dry in the summer. The house that I occupied in this locality was situated between two lagoons that contained no fish life, but were infested with yabbies (*Crustacea*), and all day long these two species of birds were to be seen perched upon a stump or log overlooking the water, and every now and then one, diving and bringing one of these *Crustacea* to the surface, would fly to a log or some convenient spot, and, putting its foot upon its prey, would pull off the tail end, and, swallowing it, resume its fishing in another spot. Upon examining these yabbies I found the head portion and the legs picked clean of all fleshy substance, this being the work of the White-fronted Heron (*Notophox nova-hollandiæ*, Lath.) I have seen one of these birds pick a fish so clean of flesh that the skeleton would have made an osteologist envious. One thing I noticed about these Cormorants is that they nearly always fish in the shallower waters, the weeds, rushes, &c., near the margin of the bank harbouring *Crustacea*.

Along the edge of these weeds in the river shoals of small perch of different species come to feed, and the Cormorant fishing overhead suddenly dives in amongst them. When fish are scarce these birds swim along under the water and make a good meal off the well-known fresh-water shrimps that are to be obtained in quantity along the weedy banks of the Ovens River. One evening, while fishing in the Ovens River, I shot a Cormorant on its way to roost, and upon dissecting it found its stomach to contain nothing else but these shrimps, which came in very handy for fishing. An old dodge, upon catching a cod, was to dissect its stomach, if short of bait. I have seen one of these birds upon the Goulburn River dive five times and every time bring up a fish. These two species of Cormorants used to build in colonies, the trees standing in a lagoon or swamp, that always contained water, being selected for their nests. So much for our inland water Cormorants.

## PART II.—OBSERVATIONS ALONG THE COAST OF WESTERN PORT BAY.

Coming now to the coast of the above bay, I find that my two feathered friends, *P. melanoleucus* and *P. sulcirostris*, are still

shallow fishers, although at times seen some distance from the shore. But this is not so much a matter of necessity in the search for food as for protection. All those acquainted with this bay know of its vast mud-flats, and at what rate the rising tide flows over them. At Tooradin a flood tide will rise 12 feet, and at low tide some miles of mud-flats are left free from water. Along the shore are several small creeks that contain a lot of Swan-grass, amongst which shrimps are to be caught in scores, while with the flowing tide shoals of fish of all varieties come to feed amongst the grass. And now the Cormorants are in their glory, the fish, being borne along with the incoming tide, falling an easy prey to these birds, who, quietly resting upon the water, find no trouble in satisfying their greed for fish. These birds are remarkably voracious, and have a very quick digestion. Their appetite is for ever craving and never satisfied. No doubt the reason for this is to a great extent caused by the vast number of thread-like worms that their stomachs and intestines contain. The worst birds that I know of for these worms are the Penguins. Upon dissecting many of these Cormorants I find that at low tide their stomachs contain nothing but shrimps, and at high tide fish. While fishing at Tooradin at Easter time I saw a Cormorant (*Phalacrocorax gouldi*) dive and bring up a bream fully half a pound in weight, and it was surprising to see the way this bird struggled to get it down. The bird still went on fishing. Anyone, upon examining these birds, will find that the nail of the second long toe upon each foot is toothed or notched like a saw, no doubt being used to assist in holding their fishy prey. This serration, as far as my knowledge goes, does not exist upon their mandibles or hook. But the Darter (*Plotus novæ-hollandiæ*, Gould), belonging to the sub-family, has this serration upon the edges of the upper and lower mandible. This bird, commonly called the Snake-Bird from the snake-like appearance and motion in using its long neck, is, in my opinion, the most powerful diver and swimmer of all the Cormorants. Upon approaching this bird while on the water, it will submerge itself, only leaving its head above, and, swimming with great rapidity, will easily outwit those not accustomed to its habits, they naturally thinking that the bird has dived under and will make its reappearance at no great distance from where first seen. Many others of our sea-birds make greater or as much havoc amongst the finny tribe, the Silver Gull (*Larus novæ-hollandiæ*) being a great nuisance to the fishermen, diving down and taking the fish out of their nets. The Gannet (*Sula serrator*, Gray) is also an expert at the game.

In conclusion, I will leave readers to form their own opinions as to whether these birds justly deserved the harsh treatment meted out to them last nesting season, when scores were shot and their young left to die of starvation.

## Bird Notes from Cleveland, Tasmania.

BY (MISS) J. A. FLETCHER, CLEVELAND (TASMANIA).

THIS open forest country, with its surrounding plains and small, stony, sheoak-crowned hills, is a happy place for the bird student. Many of the depressions between the hills are occupied by lagoons, and to these are attracted various water-fowl, both visiting and stationary. The presence of large tracts covered with banksia trees gives the place a great charm to the little feathered honey-lovers, and the gruff note of the Yellow Wattle-Bird (*Acanthoclæra inauris*), mingled with the discordant screech of the Musk-Lorikeet (*Glossopsittacus concinnus*), is at present (May) frequently to be heard.

On the 16th May I noticed, for the first time since my residence here—sixteen months—a flock of the beautiful Blue-winged Grass-Parrakeet (*Neophema venusta*). The birds were amidst some thistles in a gum-tree forest, and rose up at my approach. How beautiful they appeared as the sun's rays shone upon their colours! They did not fly far, but alighted on the low boughs of a dead wattle, and looked inquisitively at the intruder.

That same day I had the pleasure of seeing some of the Yellow-bellied Parrakeets (*Platycercus flaviventris*) in most perfect plumage; others again were more yellow, and had hardly any of the darker colouring. Flocks of Rosellas (*Platycercus eximius*) rose regretfully from their honeyed feast on the banksia trees.

Last autumn (1907) I was indeed delighted to observe the Ground-Parrakeet (*Pezoporus formosus*) on the grassy rises near the lagoon. I believe these birds are becoming very rare, and this year I have not seen any. Those I watched last year were under the almost leafless briars, and were eating the hips that had fallen. On my nearer approach they did not rise, but retreated to the cover of another clump of briars, and, when I persisted in following them, retired to the seclusion of the outer circle of reeds bordering the lagoon. This autumnal season has been a better one for grass seeds, &c., so doubtless this accounts for their absence this year.

In many of the paddocks the black wattle grows, and as every tree harbours the larva of the wattle goat moth, the Black Cockatoos (*Calyptorhynchus funereus*) are often here. How diligently they search for the poor grubs concealed in the trunks. A flock of nine settled on a neighbour's woodstack, the logs being piled lengthways, and tore the bark of the logs off in their hunt for the delicacy.

The Spur-winged Plovers (*Lobivanellus lobatus*) are plentiful, and are very fond of the destructive grass grub, as are also those much-abused birds, the Crows (*Corvus coronoides*).\*

\* Probably the Raven (*Corone australis*) is intended.—EDS.

Circling over the swamps and the adjacent bracken-covered slopes are always to be seen pairs of the Swamp Harrier (*Circus gouldi*). The children about call these birds "Free-wheelers," which is indeed a descriptive name. These Harriers nest in this district. Five eggs were found in a nest last November, and the season before nine eggs were reported as occurring in a nest. I fancy in this case that the eggs of a previous clutch must have proved infertile, and the birds had rebuilt over them.

For two seasons a pair of Small-billed Cuckoo-Shrikes (*Graculus parvirostris*) built in a wattle quite close to the Conara railway station. Unfortunately the tree has lately been cut down, so when the birds return this coming season they will have to go elsewhere.

I have seen the Bronze-wing (*Phaps chalcoptera*) about in the wattle groves. The children say they are very fond of the wattle seeds.

The Brush Bronze-wing (*Phaps elegans*) I noticed two or three times so far this season.

The gum-trees, white and peppermint, are flowering this year; the banksias are already in blossom, and when the wattles bloom shortly there should indeed be a grand banquet for some of the birds, and many interesting observations will doubtless be made.

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## The Montague Island Gullery.

BY A. F. BASSET HULL, SYDNEY.

ON the 16th September, 1907, my son and I left Sydney about 4 p.m. by the s.s. *Bega* (now lying in twenty fathoms of water off Tilba Tilba) on our way to Montague Island, situated 150 miles south of Port Jackson, and about 5 miles off the coast. The sea was moderately calm, and in the clear moonlight the rugged shore and coastal range were visible for such time as we remained on deck. At daylight the island was dimly seen, and as we gradually approached the great grey lighthouse came in view, with the first rays of the sun glinting on its lantern and flashing back myriad beams from the mirror-reflectors.

As the *Bega* slowed down about half a mile from the island, we eagerly scanned the black rocks, and noted with satisfaction that there were clouds of white-winged birds hovering over sea and land, while great white clusters on the slopes denoted the presence of groups of breeding birds.

The Admiralty chart gives the native name of this island as "Barunguba," which I am informed by Mr. Henry Dawson, of Sydney, means "Off the Coast." The island is 110 chains in length, and 40 chains in width at its widest part. The area, as measured by a planimeter on the chart, is approximately 310 acres. It is formed of two islets, connected by a narrow neck, through

which the sea breaks in very heavy weather. The southern and larger portion is of granite, the huge rounded boulders cropping up above the scanty vegetation in all directions, and on top of an immense rock in the centre stands the lighthouse, constructed of the grey granite itself. The northern portion is of black basalt, the cliffs on the seaward side being about 200 feet high and descending precipitously into the ocean.

As the steamer stopped, the lighthouse boat, manned by Mr. A. P. Bailey and his assistants, came alongside, and we descended the ladder with our luggage and camera, to meet with a hearty greeting from Mr. Bailey, whose guests we were to be for a few days. The landing-place, a strongly-built jetty, sheltered by a huge mass of granite rocks, was soon reached, and as we walked up towards the lighthouse and quarters we noted the burrows of the Little Penguin (*Eudyptula minor*) on both sides of the track. A casual investigation showed that the birds were at home, and some were sitting on their pair of eggs, while others were discussing volubly questions relative to future housekeeping. A few very ragged and dwarfed banksias (*B. integrifolia*) and Pigeon-berries (*Monotoca elliptica*) scattered at wide intervals, were the only trees on the island, but the sandy soil between the granite boulders was thickly overgrown with masses of the red-flowering pea-creeper (*Kennedyia rubicunda*). Under these creepers, tangled up with tussocky grass, rushes, and stinging nettles, the Penguins' runs and burrows extended in every direction. The Little Grass-Warbler (*Cisticola exilis*), chirping in the *Kennedyia*, a few Pipits (*Anthus australis*), and "Willie Wagtails" (*Rhipidura tricolor*) were the only land birds to be seen.

After a glance round the lighthouse and quarters, we hurried off to the north island to view the Gulls at closer range. And what a sight it was! After negotiating the stiff climb up the slippery side of the "gut" between the two islands, we came upon the first group of nesting birds in the Gullery. There, amongst the tussocks, in the sandy ravines, on the stony ridges, and scattered about the shingle on the slopes of the landward side of the island were hundreds of nests of the Silver Gull (*Larus novæ-hollandiæ*), while the birds rose at our approach and filled the air with scolding or plaintive cries. What with the noise, the flapping and fluttering of wings, and the overpowering smell, we were fairly bewildered for a few moments, and then we settled down to investigate, examine, and take notes and pictures. But, alas! the latter were fated never to see the light again, as will be seen later.

And here let me pause to give a few of the interesting details imparted to me by that keen observer, Mr. Bailey, who has had charge of the lighthouse for some years. He informed me that the Gulls begin to arrive at the island about the middle of July in each year, always appearing to come up from the *south*, in flocks of a dozen or so at a time. They continue coming in sections until the end of August, and keep strictly to the south island, where they appear to be mating, but never on any account during that period

do they visit the north island. In the first week of September\* they make ready, and on one day all rise high in the air, making a "terrible clatter." They circle round and round for about an hour, and then, as if at a given signal, they dart like lightning down on the north island, and at once set about selecting nesting places and constructing nests. It is a week from the time they alight on the Gullery until the first eggs are laid. Giving a rough estimate, Mr. Bailey considers that about fifteen thousand pairs of Gulls nest on Montague Island each year. After the young birds are taught to fly, and become strong enough to follow their parents, they start off, always going *north*, and by the end of January there is not a bird left on the island. From that date until the middle of the following July there is not a Gull to be seen on or about the island.

Here is room for some interesting speculation. Do the birds fly north and gradually complete circumvolution of the whole continent? Or do they merely follow the coast line for a certain distance, and then return, keeping to the mainland beaches, and having reached a point south of the island, when the coastal currents begin to run north again, turn round and move north with the current? The latter seems to me the more feasible solution.

To return to our observations, this first group we inspected had been visited a few days before by a party from Bermagui, who took a number of eggs for eating. Consequently the nests were in many cases empty, while others contained only one or two eggs. A little farther on, however, we found another group of nests containing for the most part three eggs, but quite a large number contained four, and during our stay on the island we found one clutch of five, and four of no less than six eggs. So far as I was able to judge, the larger clutches were from the one bird. The sitting female appeared to resent any attempt at intrusion on the part of any other bird, and the nests, although sometimes rather close together, were mostly deep, and surrounded with quite a framework of interlaced grass. In fact, some of the nests were very elaborate structures, although out on the shingly slopes they were merely deep indentations, with a ridge of pebbles and a few straws or fragments of dry seaweed round the eggs. Again, on the rocky headlands the eggs were deposited in natural hollows in the rocks, but nowhere did I see any so placed that they could roll from one nest to another.

The Gulls were easily disturbed at first, but soon returned to their nests, and if we remained still for a few minutes they would settle down again on their eggs. The groups or Gulleries are mostly situated close to the edge of the slopes on the landward

\* This year (1908) Mr. Bailey informed me that the Gulls started earlier. When he "turned in" about 11 p.m. on the 14th August the birds were making an "awful clatter," so he was not surprised on coming out in the morning (15th) to see the north island "just one white mass." The first eggs, ten single specimens in as many nests, were laid on the 23rd August; on the 25th a great number of nests contained eggs, but not more than two in any case. On the 30th a few nests contained three eggs, and on the 13th September one nest containing five eggs was noticed.



side of the island, or on the top of the cliffs and in the deep ravines on the seaward side; but there is one group towards the top and middle of the island. Judging from my five days' observations, I should think that Mr. Bailey's estimate of the numbers breeding there is a conservative one.

After spending a few hours with the Gulls on the first day, we paid a visit to the Penguins on the south island. The numbers breeding there could not be even roughly estimated, as at no time were there any large groups in sight, but their runs and burrows are found all over the south island. During the day the birds are either out fishing, or, if on the land, they are under the thick vegetation, and only discoverable after a long search. In the evening the fishers return about dusk, landing near the jetty or on the extreme southern point of the island, which is quite low. They come ashore in twos, and leisurely waddle up the path, crooning their tremulous little song, and, forming into straggling groups like tired soldiers, proceed on their way home, breaking off from time to time as they reach the turn-off to their own particular "run." I think that this island is the most northerly breeding-place of this species.\* All the nests containing eggs that I examined had two eggs, some fresh, others well advanced and nest-stained, but I found no young birds.

On the second day, 18th September, we visited the Gullery again, taking the seaward side of the island. The cliffs above and to the right of the "gut" descend in a series of shelves, thickly covered with tussocks of grass and rushes, and both on and under the tussocks the nests were in such numbers that we had to walk warily to avoid crushing the eggs. Many of the nests were placed in the centre of the grass tussocks, and the birds had made a deep depression, weaving the long stalks into a high breastwork, which kept the eggs secure from rolling. Under the tussocks the eggs were placed on a few loose straws in a depression scratched in the sandy soil.

It was indeed an interesting collection that we saw that day. Thousands of those handsome eggs, showing every recorded type, from the pale olive-green ground sparsely to thickly covered with sepia and black markings, blotches, spots, or hair-lines, to the deep rich brown ground bearing similar markings. Two noticeable variations were seen—one with very deep green ground, having a broad ring of black round the thick end; and another with amber ground capped with black, gradually merging into the brown, but without other markings. The latter was unusually large, measuring 2.43 x 1.51 inches.

The eggs in the Gullery varied very considerably in size and shape, some being long and tapering, while others were short and swollen. One remarkable clutch of three were similar in size and appearance to the eggs of the White-headed Stilt (*Himantopus*

\* Since this was written Mr. Bailey informed me that the Penguin also breeds on the Tollgates, a group of islets off Bateman's Bay, about 40 miles north of Montague Island.

*leucocephalus*), the dimensions being—(1) 1.78 x 1.31, (2) 1.78 x 1.34, (3) 1.70 x 1.36 inches. Several nests contained a malformed egg, the dimensions of one clutch being—(1) 2.18 x 1.51, (2) 2.17 x 1.51, (3) 1.26 x 1.09, while one nest contained two “runts” of varying sizes.

On the 19th I found a nest containing two eggs, one a heavily blotched but normal coloured egg—size 2.17 x 1.55 inches—while the other was a beautiful pale blue, almost the shade of the egg of *Zosterops caeruleus*, and absolutely devoid of markings—size, 2.23 x 1.51 inches. Both eggs were about 6 days incubated. This latter mutation was new to Mr. Bailey, who, however, had seen specimens with a blue ground, but with markings.

On the following day my son found a pair of eggs, one normal coloured and the other with deep blue ground fairly well covered with sepia spots and small blotches. On the way homewards I discovered still another mutation, this time a single egg in a nest in the middle of a large cluster containing twos, threes, or fours of normal eggs. The stranger was of a glossy white ground, sparsely streaked and spotted with pale red and purplish red suffused markings, and a few dull red spots distributed over the whole shell; size, 2.09 x 1.51 inches.

The following day was to be our last on the island, and during another visit to the Gullery my son found a nest containing three eggs—two normal, and one with the pale blue ground, but lightly freckled, chiefly on the larger end, with pale red markings; size, 2.06 x 1.46 inches.

In the evening we went down to the jetty and boarded the boat to intercept the steamer *Eden*, which was coming up the coast. However, the steamer kept away towards the mainland, and serenely disregarding our white boat and the signal flag on the lighthouse staff, she passed on to Sydney, leaving us to return to the island. As we landed and wandered up the track, the full moon rose above the eastern horizon through a haze, ruddy and round and large, while the sun, apparently a twin orb both in size and colour, at the same moment touched the western horizon, sinking through the dun haze behind the purple hills of the coastal range.

As duty demanded my presence in Sydney on the Monday, Mr. Bailey arranged to send us over to Narooma on the Sunday, where we might catch another steamer. In the morning we took advantage of our enforced stay to revisit the Gullery, and my son discovered a pair of the red mutation, one with creamy white ground—size, 2.09 x 1.51 inches—and the other with a warm pink ground colour, very richly marked with deep red streaks, spots, and blotches—size, 2.09 x 1.49 inches. This discovery caused him much delight, and convinced the lighthouse party that my first find of the red and white egg was not a carefully planned joke on my part.\*

\* This egg and the blue mutation were exhibited by me at a meeting of the Linnean Society of New South Wales (*vide Proc. Linn. Soc.*, part ii., 1908, p. 286.)

In the afternoon we set out in the lighthouse boat for Narooma, 5 miles distant. There was very little wind, but a long swell was rolling in to the mainland. The Narooma bar had shifted since the lighthouse men were there last, and we took it too low down. Coming in on a comber, the boat capsized, and for a few moments (which, however, seemed quite long enough) I sought the bottom of the sea. Failing to find it, I came up and contented myself with the bottom of the boat, where I found the two assistant lighthouse keepers, but no sign of my boy. Searching for him amongst the floating gear alongside I saw his head emerge a yard or two away, and he came for the boat in great style, getting a good foothold on the coamings and a grasp of the keel just in time to meet the next roller which swept over us. He had been up in the bow when the boat capsized, went down with the mast and sail, and came up under the boat. He then dived out and cleared the wreckage successfully. For the next half-hour we hung on to the upturned boat, and our years of indulgence in the surf-bathing "habit" stood us in good stead, for we emerged from each successive roller wet but cheerful. There was no question of swimming for the shore, for this bar abounds in sharks, as many as 32 having been caught in a day's fishing. Our accident was witnessed by several people on shore, and the lifeboat put off and rescued us from our unpleasant perch, soaked, somewhat cold, hatless, but otherwise unharmed. The boat's gear and some of our lighter articles of luggage, including a basket containing the precious "mutations," floated, and were picked up by the rescue party, but my camera and the series of 30 plates of the island and Gullery in all their undeveloped wealth of possibilities went to the bottom on Narooma bar.\*

Later on in the season Mr. Bailey sent me another pair of the red mutation with the creamy-white ground—dimensions, (1) 2.04 x 1.50, (2) 2 x 1.42 inches—and a beautiful clutch of three of the pale blue eggs without markings—dimensions, (1) 2.08 x 1.51, (2) 2.09 x 1.52, (3) 2.21 x 1.51 inches—and one of the latter forming one of a clutch of four, the other three being normal.

A colony of Crested Terns (*Sterna bergii*), about 3,000 in number, also breeds on the north island. Last September, when we left, a few birds had arrived, but they did not lay until late in October. Mr. Bailey found one bird only sitting on two eggs, the others being satisfied with a single egg. I have the pair in my collection, one of which has a very heavily scored figure 2 amongst the natural markings on the top. This year (1908) Mr. Bailey states that the Terns arrived before the 15th August, but had not started to lay by the 14th September.

\* Members of the A.O.U. will congratulate Mr. Hull and his party on their fortunate escape, and will sympathize with him and his son in the loss of what would have undoubtedly proved to be an exceedingly interesting set of pictures. It is to be hoped that a favourable opportunity may occur some day to retake them.—EDS.

## Great Forward Movement in Bird Protection.

AT the Annual (Hobart) Session of the Australasian Ornithologists' Union, held during November, 1903, a comparative statement of the schedules of protected birds in the various States was presented, and was referred to the Council for action (*vide Emu*, iii., p. 159).

At the next Hobart session (1906) the burden of the president's address, which was delivered by Colonel C. S. Ryan, was "The Protection of Native Birds," in which he reviewed the history of bird protection in America, and concluded with practical suggestions for the betterment of bird protection within the Commonwealth (*vide Emu*, vi., pp. 95-103).

The following (1907) session was held at Sydney, when, in the absence of the president (Mr. D. Le Souëf, C.M.Z.S.), who was travelling abroad, Mr. A. J. Campbell, C.M.B.O.U., delivered the vice-presidential address. Mr. Campbell took for his subject the history of "Bird Protection in the Old World." In passing, he mentioned that "Mr. A. H. E. Mattingley's graphic pen and picture description published in *The Emu*\* concerning the ruthless destruction of the beautiful snow-white Herons in Riverina by the plume-hunters should spur all bird-lovers into hot action," and succeeded in carrying a resolution that at the next annual meeting, to be held in Melbourne, November, 1908, it be made a "Bird Protection Session," and that delegates be invited from the various States to consider a "Model Bird Protection Bill," and that in the interim a deputation from the Council of the A.O.U. wait upon the Hon. Premier or the Hon. Minister of Agriculture, Victoria, on the subject.†

By a most fortunate coincidence, since the Sydney session quite a "boom" has taken place in the direction of bird protection in Australia, chiefly in consequence of the introduction into the British Parliament of Lord Avebury's "Importation of Plumage Prohibition Bill" and the "Report of the Select Committee of the House of Lords" thereon. While in England, Colonel C. S. Ryan, a member of the Council of the A.O.U. and for two years its president, was deputed by the representative of the Commonwealth of Australia to give evidence before the committee with regard particularly to the destruction of Egrets, Lyre-Birds, and Birds-of-Paradise.‡ Regarding the last-mentioned birds,|| Col. Ryan felt "perfectly certain that Mr. Deakin would do everything that he possibly could to stop their further destruction."

The Commonwealth press warmly took the matter up, and, amongst other journals, leaders appeared in the *Melbourne Age* (2/7/08), the *Rockhampton Morning Bulletin* (25/7/08), the *Melbourne Argus* (18/8/08), and the *Melbourne Herald*.

\* Vol. vii., pp. 71-73, and plates v.-viii.

† *Vide Emu*, vol. vii., p. 136.

‡ *Vide Report, Minutes of Evidence*, p. 32.

|| The first letter on this subject from the Council of the A.O.U. to Mr. Deakin was dated 16th July, 1907.

At this juncture the recently formed "Advisory Committee *re* Fisheries and Game Acts of Victoria," led by Professor W. Baldwin Spencer, C.M.G., F.R.S., formed a deputation to wait upon the Hon. the Prime Minister (Mr. Deakin) with regard to the prohibition of the exportation of the skins and plumes of birds used for purposes of ornamentation. This appeared to anticipate the work of the Australasian Ornithologists' Union, which was a Commonwealth association, was already well forward with the movement of bird protection, was in touch with the Prime Minister in the matter, and committed to certain lines of action, therefore the Council felt that it could not sink its individuality in a State or local concern, and it was arranged that the Council's deputation should appear together with the deputation of the Victorian Advisory Committee before the Prime Minister. The following is an account, as reported in *The Argus* (5/8/08), of the joint deputation:—

"A powerful deputation, representing all the ornithologists' societies in Australia, waited upon the Prime Minister (Mr. Deakin) yesterday, to urge that the Commonwealth should take action to prevent the destruction of Australian birds.

"Professor Baldwin Spencer said that action had been taken in the United States. The State of New York had forbidden the importation of bird skins and plumage. The best action that the Commonwealth could take would be to prohibit the exportation of bird plumes and skins.

"Mr. A. J. Campbell, vice-president of the Australasian Ornithologists' Union, said that the president (Mr. Le Souëf) was too ill to be present. Under section 52 of the *Customs Act* it needed only a proclamation to prohibit the importation of skins and plumes. There might be some trouble about prohibiting the exportation, but they trusted that the Prime Minister would devise some means of doing it.

"Mr. A. H. E. Mattingley, honorary secretary of the Union, said that the deputation's request applied to Papua and Australia. They wanted to check the wanton destruction of some of the most useful Australian birds, that were slaughtered principally to form millinery for ladies. At an auction sale held in London there were catalogued 28,600 skins of Birds-of-Paradise, the nesting plumes of thousands of Egrets, an immense number of ordinary plumed birds, a large number of Lyre-Birds' tails, Crested Pigeons, and Kingfishers. The London sales accounted for 20,000 Kingfishers alone, and this took no account of private sales or sales in other parts of the world. Australian birds possessed the fatal gift of beautiful plumes, and were ruthlessly slaughtered.

"Surgeon-General Williams, representing the New South Wales societies, said that he was an observer of the Herons, to which the Egrets belonged. He knew them to be of the greatest practical value to squatters, farmers, and all who had to do with the conservation of water.

"Mr. E. B. Nicholls, of the Bird Observers' Club, said that 200,000 Ibis nested together in one district. On examination of the stomach of one, 2,400 immature grasshoppers and a number of snails were found in it. That meant that one colony of Ibis was responsible for the destruction of 480 million grasshoppers.

"Mr. F. R. Godfrey said he had been told of hundreds of Blue Wrens being seen in one box in one shop. It was terrible that this destruction should be allowed to go on. He noticed a distinct lessening in the bird life in the country.

"Mr. Keartland, of the Field Naturalists' Club, said that one State was played off against another. In Melbourne it was said that Lyre-Birds' tails were got in New South Wales, while in Sydney it was said they were

obtained in Victoria. Thus the game laws of both States were defeated. The Federal Government should take action which would do away with this difficulty.

“Mr. Deakin, in reply, said that the deputation was the most representative of this character which had ever put forward its views in Australia. They devoted themselves, of their own choice and taste, it was true, to pursuits which had an enormous economic value to this country. He was quite confident from his own reading and general knowledge that the statements they had made as the value of bird life to the Commonwealth were accurate, and by destroying certain forms of that bird life, either intentionally or more or less accidentally, they were disturbing the balance of Nature, for which they must pay a heavy debt. (Hear, hear.) The question touched upon humanitarianism, if that word could be applied to birds, and some of the speakers seemed to have a greater faith in the Commonwealth Government than a knowledge of the Commonwealth Constitution. (Laughter.) It was not in the Commonwealth's power to legislate in regard to the animal or bird life of this country, so that the law should operate in all the States. He believed that if they would repeat their request to the State Governments those Governments would enforce the existing laws so as to prevent the massacre of Lyre-Birds, to which allusion had been made. Another sex had a controlling power in this matter far greater than the Commonwealth and States combined. If that womanly pity were only directed to the matter they would have accomplished the whole of what they had in view. If Australian women were active in that regard they would achieve in Australia at once what the Government could not do for many years to come. In June last he had found that of the two powers which the Commonwealth Government might exercise they had at present only the minor power of prohibiting importation. He had asked the Minister of Customs to draft a by-law prohibiting the importation of birds' plumes and skins. The great power was control of exportation. He had asked the Minister for Customs to prepare a bill giving the Commonwealth that power. This bill would be brought forward before the end of the year. In the meantime he had last month communicated with the various States inviting the Governments to prevent the ruthless destruction of these beautiful birds. New South Wales and Victoria replied that they would give the matter consideration. South Australia said that the provisions of the existing law would be enforced. Tasmania also referred to the *Game Protection Act*. From Queensland and Western Australia he had received no replies. He had very little doubt that if their association put itself in touch with the State Governments they would find a ready response. In reply to the inquiry from Lord Avebury's committee, he had cabled to London that they had no objection to the bill which the committee proposed to introduce. To date the Commonwealth had done all that it was possible to do—('Hear, hear')—and they would ask for larger powers before the year closed. In Papua in 1904 they had prohibited, except under special permit, the killing of Birds-of-Paradise. That was suspended for one year, which ended in April last. The suspension covered only a small area. No authority had been given for any extension of that suspension, and at present destruction of birds in Papua was prohibited.”

Considerable interest concerning bird protection has also been aroused in New South Wales. Mr. A. H. S. Lucas, M.A., B.Sc., on the 25th March, 1908, in his presidential address to the Linnean Society, concerning *Birds*,\* stated:—

“It is hard to speak in terms of calm moderation on the subject of the protection of our native birds. Enthusiasm is liable to be looked upon with suspicion. But the point is that everyone who studies the useful

\* *Proc. Linn. Soc. N.S.W.*, vol. xxxiii., pp. 33-37.

work done by our beautiful feathered friends inevitably becomes an enthusiast for their protection. Great credit is due to the members of the Australasian Ornithologists' Union, to Colonel Legge, Colonel Ryan, Mr. Dudley Le Souëf, Mr. A. J. Campbell, Mr. Mattingley, and the rest, for their persistent endeavours to bring the importance of the work done by the birds home to the Governments and people of the Commonwealth.

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“Colonel Ryan and Mr. Campbell have in successive addresses to the Ornithologists' Union shown what measures have been adopted in America and Europe for the protection of birds.

\* \* \* \*

“To what extent importance is attached to bird protection in Europe is seen from the fact that the great countries of the Continent have combined to adopt international legislation on the subject. Mainly through the efforts of the Austrian and Hungarian Governments, all of the Continental nations, except Italy, Russia, and Turkey, in 1902, accepted through their plenipotentiaries a model bird bill to be incorporated in the laws of the several countries. The necessity for common action arises because the land-frontiers of the countries are no barriers for the birds. For the same reason it is eminently desirable that the whole of the Australian State Governments should adopt the same legislation in the matter. It is obviously more effective to protect the birds in all the States than in a few, and it is eminently desirable that destroyers of protected birds in one State should find no refuge against prosecution in an adjoining one. They have found this out in Europe; they have found this out in the United States. We may well follow suit in Australia.

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“It is generally best to attain one's ends by persuasion rather than by compulsion, and while it may be necessary to restrain the larrikins of the town, it is eminently desirable that the rural population should have the facts brought home to them, and should heartily co-operate with the Government in a work which so nearly concerns themselves. The larger useful birds of the interior are being destroyed wholesale by the poison laid for pests, and the country thus denuded of its native police is being opened up for the awful plagues of caterpillar and locust. We must try and win the farmer and his household, the squatter and his riders, to the side of their truest friends and best allies, the birds.

“The adoption of an Arbor and Bird Day in the country schools has met with success in the United States, and is well worth a trial here. For the sake of the land we love we need to train the children to love the tree and the bird. To quote the Secretary for Agriculture, Mr. Sterling Morton (1904)—‘Public sentiment, if properly fostered in the schools, would gain force with the growth and development of our boys and girls, and would become a hundredfold more potent than any law enacted by the State or Congress. I believe such a sentiment can be developed, so strong and so universal that a respectable woman will be ashamed to be seen with the wing of a wild bird on her bonnet, and an honest boy will be ashamed to own that he ever robbed a nest or wantonly took the life of a bird.’ So may it be.”

At a subsequent meeting of the Linnean Society of New South Wales, held on the 26th August, 1908, the president (Mr. A. H. S. Lucas) invited general discussion upon the question of the welfare of the indigenous fauna and flora and the best means of safeguarding it.

Mr. A. J. North, of the Australian Museum, contributed a short paper on "Bird Protection and Bird Destruction in New South Wales," in which he pointed out certain weak points in the original Acts in force in the State, and outlined the efforts which had been made to remedy them. It was impossible to afford full protection to many species unless absolute protection was given, because of irregularities in breeding habits. Vast destruction of birds was due, directly or indirectly, to the introduction of undesirable aliens, particularly rabbits and foxes, and to the efforts made to keep these in check. He advocated the reprinting of the Acts in force, together with the additions that had been subsequently made, in the newspapers, so that the widest publicity might be given to them. Gould Societies might very advantageously be inaugurated throughout the State, to take up work on the lines so successfully followed by the Audubon Societies of the United States, and to bring about the observance of "Bird Day" in the schools. But there could be no doubt that perhaps the most urgent need at present was better administration of the legislation provided in the existing Acts.

Mr. R. Etheridge, jun., Curator of the Australian Museum, spoke in favour of the retention of most of the clauses of the Act of 1901, provided the Act was properly put into operation. For example, the present Act provided that mere possession of a scheduled bird was sufficient to constitute liability; this was a wise provision and should be retained. The existing schedules, however, were defective and confusing. The suggestion that the birds that might be shot should be specified, and all others protected, was an excellent one. The urgent need for reform in the administration of the Act was evidenced by the enormous amount of trapping of native birds, including scheduled birds such as the Lyre-Bird, for commercial purposes, and by the openly conducted sale of scheduled birds, such as Seagulls, in Sydney.

Mr. Deane specially referred to the very serious complications which the rabbit-destruction question created, so long as the laying of open poisoned baits and the poisoning of waterholes were resorted to on a large scale.

Mr. J. H. Maiden, representing the Royal Society of New South Wales, communicated a letter which had been received from the Royal Society for the Protection of Birds in London, upon the subject of the treatment which is now being meted out to Birds-of-Paradise in New Guinea since the rescission of the proclamation made in 1904 for the protection of these birds, and asking for the support of the society in obtaining a renewal of the proclamation. The Royal Society of New South Wales had accordingly approached the Commonwealth Government, through the kind offices of the Premier of New South Wales. Copies of the correspondence were communicated to the meeting. The speaker then addressed himself more particularly to the difficult question of the best means of securing the protection of native plants. As the representative of the Zoological Society of New South Wales also, Mr. Maiden com-



municated a message from the hon. secretary to the effect that the society was arranging for a deputation to the Premier.

Mr. Frank Farnell (chairman of the National Park Trust), Mr. F. J. W. Harrison (secretary to the Kuring-Gai Chase Trust), Mr. F. M. Rothery (secretary of the Animals Protection Society of New South Wales), and others, also spoke.

It was resolved that a sub-committee, consisting of Messrs. R. T. Baker, W. W. Froggatt, A. G. Hamilton, J. H. Maiden, A. J. North, and the *ex officio* members, be appointed to confer with the other societies which are contemplating an appeal to the Government.

(Continued on p. 110.)

## The Mutton-Bird (*Puffinus tenuirostris*) Traffic.

### IMPORTANT RECOMMENDATIONS.

THE Commissioner of Police (Mr. Lord) has submitted to the Attorney-General (Tasmania) his report upon his investigations made during his recent visit to the Furneaux Group in the Strait.

After giving a general history of the claims for Mutton-Bird reserves on the island, Mr. Lord submitted a number of deductions and recommendations. Stock-grazing on rookery reserves should be discontinued. He asserts that even if all arguments in favour of stocking were to be admitted, then it should still be prevented, because if stock were once landed there could be no guarantee that it would be removed before the birds laid. A grazing lease which was issued in June last for the Chappel reserve he considered to be *ultra vires*, and thought it should be cancelled as from 1st September, steps being taken to have stock removed immediately.

Mr. Lord next recommended that freehold blocks on the islands upon which Crown lands have been reserved for Mutton-Birding should be resumed by the Crown. He holds that there can be no satisfactory administration of the regulations until this be done. He recommended that blocks should be resumed at Chappel Island totalling 90 acres, 100 acres on Babel Island, and five acres on Little Green Island. There were no freeholds on the other islands reserved for Mutton-Birding purposes. The whole of the rookeries had been deserted, and the remainder were not so good as they were, yet a greater number of birds were taken.

The Mutton-Birds traced to Launceston merchants for the markets during the past five years were as follows:—1904, 379,804; 1905, 459,094; 1906, 493,777; 1907, 572,671, and 1908, 636,592. Nothing was done to improve the existing rookeries, or to limit the number of birds destroyed.

On such lines, remarks Mr. Lord, it would be remarkable if the supply did not eventually run out. He recommended to limit the issue of the Mutton-Bird license to the capacity of the respective Mutton-Bird reserves, licenses to be issued only to *bonâ-fide* residents of the Furneaux Group of 12 months' standing. It was

his opinion that the industry should be maintained by the islanders, who, as he had stated previously, were very largely dependent upon it. It was not large enough to withstand mainland labour or enterprise. He recommended, further, the proclamation of other small islands as Mutton-Bird reserves at once. Cat Island and Rum Island were instanced, and he thought that if these small islands were not even worked, the rookeries upon them should be preserved as breeding grounds. He recommended that every person employed upon Mutton-Bird reserves during the Mutton-Bird season should be licensed. He thought the present fee (10s. and 5s.) small enough. At present the license fee worked out at about 2s. per thousand, while the value of the Mutton-Birds was £5 per thousand. He thought, however, that a license fee of 10s. should only be charged to persons over the age of 12 years, instead of 10 years. He further urged that the season should open four days later, on 24th March instead of 20th March. This would reduce the take somewhat, and the birds taken would be of better quality, and better prices would rule. It would be wise also to prevent birds being taken after dark. Any person found with a light on the rookeries at night should be liable to a heavy penalty. He would improve the reserves by commencing holes for birds where they were nesting indifferently, and propagate natural cover. He further recommended substituting 15th September for 1st September, thus allowing persons to land upon the Mutton-Bird reserves to within a few days of the return of the birds.

The erection of birders' sheds should also be attended to, and better provision should also be made to prevent any egging and capture of old birds, and in enforcing the regulations generally. Mr. Lord thinks the constable at Cape Barren Island should be provided with a motor boat, to enable him to get about speedily and in all weathers. He recommended provision being made for inspection during the birding season (March to May), and thought dressing, packing, and curing should be done under supervision. The birds for 1908 season might safely be estimated at from 1,000,000 to 1,030,000, and the value (including feathers, oil, &c.), at over £6,000.

His last recommendation in respect to the Mutton-Bird industry was for the prohibition of dogs landing on reserves.—*The Examiner*, Launceston, 4/9/08.

## Bird Prosecutions under the "Game Acts," Victoria.

MR. C. W. Maclean, engineer in charge of the Ports and Harbours Department, is also honorary executive officer of the Victorian *Game Acts*, which are administered under the Hon. the Minister of Public Works. Mr. Maclean and his officers have shown commendable activity in the numbers of successful convictions they have secured against offenders. Omitting animals and fishes, the following statement shows the convic-

tions regarding transgressions against birds, under the *Acts*, for the last two years :—

| Date.    | Court.                 | Offence.                | Fine.               |
|----------|------------------------|-------------------------|---------------------|
| 9/1/06   | .. Seymour (2)         | .. Killing Wild Duck    | .. ea. £2           |
| 12/1/06  | .. Rushworth           | .. "                    | .. 15s.             |
| 17/1/06  | .. Dunkeld ..          | .. "                    | .. £1 5s.           |
| 31/1/06  | .. Werribee (2)        | .. "                    | .. £2 5s., £2       |
| 31/1/06  | .. Chiltern (3)        | .. "                    | .. £9 10s. (total)  |
| 18/1/06  | .. Wangaratta          | .. "                    | .. £1               |
| 27/1/06  | .. Benalla (2)         | .. Killing Quail ..     | .. £2 15s., £2 10s. |
| 3/1/06   | .. Chiltern (4)        | .. Killing Wild Duck    | .. £7 10s. (total)  |
| 23/1/06  | .. Seymour (3)         | .. "                    | .. ea. £2 1s.       |
| 26/1/06  | .. Cobram ..           | .. "                    | .. £1 5s.           |
| 14/2/06  | .. Rushworth           | .. "                    | .. £3 5s.           |
| 5/2/06   | .. Cranbourne (3)      | .. Killing Black Swan   | .. £3 15s. (total)  |
| 7/2/06   | .. Numurkah            | .. Killing Wild Duck    | .. 10s.             |
| 5/3/06   | .. Bendigo ..          | .. Killing Wild Pigeons | .. 15s.             |
| 10/4/06  | .. Jamieson ..         | .. Killing Wild Duck    | .. £1 15s.          |
| 11/4/06  | .. Pyramid Hill        | .. "                    | .. £1 5s.           |
| 22/9/06  | .. Benalla ..          | .. "                    | .. £3               |
| 28/10/06 | .. Horsham ..          | .. Killing Plover       | .. £1 5s.           |
| 15/11/06 | .. Benalla (2)         | .. Killing Wild Duck    | .. ea. £2 5s.       |
| 24/11/06 | .. Elmore ..           | .. "                    | .. 15s.             |
| 28/12/06 | .. Williamstown (2) .. | .. "                    | .. £3 10s., £3      |
| 16/1/07  | .. Chiltern (2)        | .. "                    | .. 10s.             |
| 7/1/07   | .. Yarrowonga          | .. "                    | .. £1 10s.          |
| 9/1/07   | .. Tallangatta (4)     | .. "                    | .. £9 15s. (total)  |
| 18/1/07  | .. Ararat ..           | .. "                    | .. £2               |
| 25/1/07  | .. Nagambie ..         | .. "                    | .. 10s.             |
| 31/1/07  | .. Wangaratta          | .. "                    | .. £3               |
| "        | .. Geelong (2)         | .. "                    | .. ea. £3           |
| 7/2/07   | .. "                   | .. "                    | .. £3 5s.           |
| 6/2/07   | .. Sorrento (3)        | .. "                    | .. £3 1s. (total)   |
| 13/2/07  | .. Pyramid Hill (3)    | .. "                    | .. ea. £2           |
| 9/1/07   | .. Cunninghame (2)     | .. "                    | .. ea. £2 2s. 6d.   |
| 29/1/07  | .. Port Fairy          | .. "                    | .. £2               |
| 6/2/07   | .. Pyramid Hill        | .. Killing Black Swan   | .. £2 5s.           |
| "        | .. "                   | .. Killing Wild Duck    | .. £2 18s.          |
| 11/1/07  | .. Warracknabeal (2)   | .. "                    | .. £2, £1 10s.      |
| 1/2/07   | .. Bairnsdale          | .. "                    | .. £1               |
| 6/2/07   | .. Cobden ..           | .. "                    | .. £2               |
| 7/2/07   | .. Benalla ..          | .. "                    | .. 6s.              |
| 13/2/07  | .. Skipton ..          | .. "                    | .. £2 13s. 4d.      |
| "        | .. Rushworth           | .. "                    | .. 15s.             |
| "        | .. Skipton (2)         | .. "                    | .. ea. £2 13s. 4d.  |
| 20/2/07  | .. Rupanyup            | .. "                    | .. £1 10s.          |
| 26/2/07  | .. Geelong ..          | .. Killing Quail        | .. £1               |
| 22/2/07  | .. Majorca ..          | .. Killing Wild Duck    | .. £1 5s.           |
| 7/2/07   | .. Birchip ..          | .. "                    | .. £1 5s.           |
| 4/2/07   | .. Buninyong           | .. "                    | .. £1 10s.          |
| 15/2/07  | .. Stawell ..          | .. Killing Wild Pigeons | .. 10s.             |
| 14/3/07  | .. St. Arnaud (2)      | .. Killing Quail        | .. ea. £3           |
| 19/2/07  | .. Tarnagulla          | .. Killing Wild Duck    | .. 15s.             |
| 28/2/07  | .. Sebastopol          | .. Killing Quail        | .. 7s. 6d.          |

| Date.    | Court.                 | Offence.                | Fine.             |
|----------|------------------------|-------------------------|-------------------|
| 1/3/07   | .. Horsham (2)         | .. Killing Wild Duck    | .. 10s., £1       |
| 4/4/07   | .. Hopetoun ..         | .. ..                   | .. 10s.           |
| 20/5/07  | .. Serpentine Creek .. | .. ..                   | .. £2 5s.         |
| 9/4/07   | .. Mortlake (2)        | .. Killing Quail        | .. ea. £2 2s. 6d. |
| 21/2/07  | .. Rokewood ..         | .. Killing Wild Duck    | .. £1 10s.        |
| 24/8/07  | .. Portland (3)        | .. Destroying Swan eggs | ea. 6s.           |
| 13/11/07 | .. Birregurra          | .. Killing Wild Duck    | .. £1             |
| 7/11/07  | .. Geelong ..          | .. Killing Jackass      | .. 10s.           |
| 1/11/07  | .. Nagambie ..         | .. Killing Wild Duck    | .. 10s.           |
| 27/6/07  | .. Edenhope ..         | .. ..                   | .. 15s.           |

[Grand total, £156, which does not include "costs" obtained or £3 fine at Geelong (22/1/07) for having an illegal gun.]

### Stray Feathers.

EMUS IN THE GRAMPIANS.—Constable Curtain (Stawell West), in a recent report for the Chief Commissioner of Police, states:—"There are a good many Emus in the valleys of the Grampians. They are very tame—a good sign that they are not chased or shot at. I will keep a good look-out and see that they are not interfered with."

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SPINE-TAILED SWIFTS.—In the July issue of *The Emu*, page 39, there appears a statement that some Spine-tailed Swifts (*Chatura caudacuta*) were observed making southward. I have been observing the aerial movements of the birds of these parts for over 12 years, and have seen Spine-tailed Swifts appear and disappear scores of times, but never once have I seen them disappear to the southward. They have always come from south to south-east and have gone north to north-west.—F. M. LITTLER. Launceston (Tasmania).

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CORMORANTS *v.* YABBIES, &c.—I had occasion to visit a district of north-west Victoria which is intersected by irrigation channels, in which I noticed many Cormorants feeding. I remarked to a resident of the district who was accompanying me—"I suppose there are fish in these channels?" "Oh, no," he said, "there are not any fish in them!" "Well," I said, "what are the Cormorants feeding upon?" "Oh, yabbies (*Crustacea*) and shrimps," was the laconic reply. "Do the yabbies bore through the walls of the channel and allow the water to run to waste?" "Yes." "Then the Cormorants, by destroying the yabbies, save much water for the irrigationist?" "Yes, millions of gallons!"—J. A. ROSS. Melbourne.

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WHITE-BROWED BABBLERS AS PILLAGERS.—While in the Coolgardie district, about the end of July last, I observed a pair of the above birds (*Pomatorhinus superciliosus*) pulling at what appeared to be the remains of some old nest in a low bush, while four *Acanthizas* were fluttering round them in a very excited state.

On my approaching the scene of operations the Babblers and one pair of *Acanthizas* "moved on," the other pair remaining. I then noticed that the apparently "old" nest was the "new" one of the remaining pair of *Acanthizas* (*A. apicalis*), and that the side and bottom of it had been pulled out by the Babblers, the freshly-broken eggs (3) lying on the ground beneath. Is this a usual custom of the Babblers? I have never noted it before.—CHAS. G. GIBSON. Perth (W.A.)

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KESTREL MIMICKING ROOT.—Whilst walking along the Namoi River, unfortunately without my usual companion, the camera, I saw what at first sight appeared to be a gnarled root projecting from the bank. But, being uncertain, and to convince myself, I walked towards it, and found it to be a Nankeen Kestrel (*Cerchneis cenchroides*). It was sitting almost erect, with its head turned slightly to one side, resembling broken roots in the vicinity. It allowed me to approach within 10 feet of it before it flew away. In flying I noticed that one of its legs was missing—possibly it had been shot off, and apparently for some considerable time. I am of opinion that the Kestrel, through this deficiency, found it rather difficult to perch on the trees, so took to roosting on ledges of the river banks, where it has acquired the art of root-mimicking.—HARRY BURRELL. Manilla (N.S.W.), 7/8/08.

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MALURUS FIGHTING ITS SHADOW.—On several occasions last month I noticed a female Blue Wren (*Malurus cyaneus*) fluttering like a moth at the window leading into our garden. She would then fly to a rose-bush close by, where the male bird was sitting watching her. After she had rested awhile she would fly straight back and repeat the performance. I stood inside the room close to the window watching her. But apparently in her excitement she could not see me, as she did not stop her strange antics. On another occasion I heard fluttering, so I quietly drew the curtains aside and watched her again. A Persian cat jumped on to the table in front of the window and watched her also, but even that had no effect. After sending the cat outside, I waited for the bird to return to her mate, who was then hopping about excitedly. I then pulled the top sash down silently. After a few minutes I closed the window again, when she evidently caught sight of it, for she came back and hammered away at the glass until she fell, almost exhausted, with outspread wings, on the window-sill below, where she stopped for a few seconds before returning to her mate, who seemed greatly excited all the while. At first I thought the bird had mistaken the glass for space; but, if she was so anxious to come in, why not try when the window was pulled down? I have come to the conclusion that it was nothing but pure jealousy that caused her to fight so hard her own reflection in the window.—HARRY BURRELL. Manilla (N.S.W.), 11/8/08.

“MANY a year has come and gone since we first knew Heidelberg, and listened to the Bell-Birds pealing their chime of wood-notes wild from the huge eucalypts which, in the days of Batman and Fawkner, fringed the banks of the winding stream. Below the town still flows the Yarra, perennial as of yore, fed by mountain streams and unfailing rivulets. But how changed are the woods and fields and the reed-fringed lagoons which in earlier days followed its winding course. The girdling reed-beds which sheltered the wild-fowl have disappeared before the encroaching live stock. A bare pond-like outline alone remains where once lay the mysterious mere—haunt of the Bittern, the Heron, the Ibis, and the Pied Wild Goose.”—ROLF BOLDREWOOD, *The Australasian*, Melbourne, 13th June, 1908.

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MORE ABOUT CORMORANTS *v.* FISHES.—I was much interested in Mr. Mattingley's paper on “Cormorants in Relation to Fishes,”\* and agree with him that the harm done by these birds is altogether over-estimated. Fishermen are too prone to attribute the depletion of the fishing beds and streams to the depredations of the Cormorant. They will not admit that the shoals of fish taken in the nets from these same fishing grounds have anything to do with the diminution of their numbers. They simply scout the idea. The whole of the blame is laid upon the poor defenceless bird, and the exaggerated tales of its misdeeds are accepted without question by most folk, either because they have no opportunities of observing the bird's habits, or do not take the trouble to investigate for themselves. It is man all the time who is responsible for the decrease in numbers of the fish. In Tasmania there are many inland streams never visited by a Cormorant, yet a wise Fisheries Board of Commissioners have found it necessary to restock the streams with ova and fry to prevent them being a useless asset, so far as angling is concerned. Our fishermen complain of the growing scarcity of the fish on the East Coast—blame the Cormorants, of course. On the West Coast fish are abundant, but the West is rough and stormy, and seldom is it safe for the fishing boats to venture there. The East, on the contrary, is sheltered, and the waters are calm, consequently, the fishing craft are always along the Eastern Coast. The Cormorants are equally as numerous on the western shore as on the eastern. Why, then, are fish more abundant at the former place if the Cormorant is such a destroyer as they would have us believe? It is almost useless trying to vindicate the bird—one invariably meets with ridicule. Few have a good word for the “Shag,” as it is commonly termed; it is the most despised of birds. With a companion I cycled to a swamp, some 12 miles from town, to observe Musk-Ducks, but we were unsuccessful in our quest. An old fence runs through the centre of the swamp, which covers

\* *Emu*, vol. viii., p. 18.

an area of about 120 acres. On the top of nearly every post was perched a White-breasted Cormorant (*Phalacrocorax leucogaster*). The attraction could not be fish, there being none in the lagoon excepting eels, and it is rather too early for them to be moving. Evidently the birds were after frogs, &c., which abounded there.—ARTHUR W. SWINDELLS. Hobart, 25/8/08.

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## FULHAM (S.A.) NOTES.—

17th April, 1908.—First appearance of Red-capped Robin (*Petræca goodenovii*), travelling south.

19th April.—First appearance of Flame-breasted Robin (*Petræca phænicea*), travelling south.

10th July.—Found Spur-winged Plover (*Lobivanellus lobatus*) nesting—three eggs.

22nd July.—The first Pectoral Rail (*Hypotaenidia philippinensis*) has put in an appearance for the season.

27th July.—Discovered Black Duck (*Anas superciliosa*) nesting in rushes near water—nine eggs. Another Rail (*H. philippinensis*) has joined the one which came on the 22nd.

28th July.—A flock of Swans (*Chenopsis atrata*), numbering 40, passed over my house at 5 p.m. I have not been out in the swamps one night lately without seeing several flocks; they seem to be increasing rapidly since totally protected.

9th August.—Pair of Grey Shrike-Thrushes (*Collyriocincla harmonica*) appears, making a great noise, and calling for hours in their melodious way.

10th August.—Shrike-Thrushes open attack upon Black-Birds (introduced).

13th August.—Heard first call of Sacred Kingfisher (*Halcyon sanctus*).

14th August.—Discovered Whistling Eagle's (*Haliastur sphenurus*) nest in course of construction in large isolated gum-tree; observed four birds in the vicinity.

23rd August.—Eagle's nest contained a clutch of three eggs. Welcome Swallows (*Hirundo neoxena*) started to build under verandah.

9th September.—Swallows (*H. neoxena*) commenced to line with gum leaves old nests which are situated under verandah. Discovered nest of Tawny-shouldered Podargus (*P. strigoides*) constructed of quite a bunch of dry twigs, placed on a horizontal fork not 3 yards from roof of house. These birds last season brought out two young ones in same place, but during a stormy night lost one. The remaining young bird could be seen perched between the old birds any day for the last 12 months.—(CAPT.) S. A. WHITE. Fulham (S.A.), 5/9/08.

\* \* \*

NEST AND EGGS OF CALAMANTHUS MONTANELLUS (Rock Field-Wren, Milligan, *Emu*, vol. ii., p. 201).—As I believe the eggs of this species are hitherto undescribed, I append account of the finding of a clutch to-day (28th August, 1908). Mr. Milligan and party only

met with this species on barren, rocky ground at the Stirling Ranges, about 60 miles south-east from here, in September, 1902, but on 3rd November last year I found them numerous on a sand plain a few miles east of the railway, where there is absolutely no rock or stone. The old birds were busy attending to their recently fledged young. I procured two of the birds, and sent them to the Perth Museum, and they agreed with specimens obtained at the Stirling Ranges, excepting a slight difference in shade of colour. This year I determined to discover the nest and eggs of the species, and on my third trip out to the sand plain was successful. After driving with my buggy and tramping many miles through the shorter vegetation (about 1 foot in height), I decided to try where the scrub grew much thicker and to a height of 5 to 10 feet. In a fairly open patch in this scrub an undoubted *Calamanthus montanellus* crept rapidly out of sight, without my being certain of the exact spot from which it had started. After searching awhile, I marked the place, and gave the bird an hour's grace. Returning, the bird, to my surprise, twisted itself away and out of sight almost instantly from what seemed an almost bare patch of ground, but which I was certain now contained a nest. Until I got down on my knees, and sighted the aperture of the nest, there was absolutely nothing to catch the eye. The nest was of almost globular shape, about 4 inches in diameter, and placed in a slight hollow (about 1 inch deep) in the ground. The entrance was almost level with the ground surface,  $1\frac{1}{2}$  inches wide by 1 inch in height, and faced almost due north. The nest was built between two thin branches of a coarse dry grass, and the top of it resembled one of the small ant-heaps occurring on sand plains, built up of short lengths of dry grass. Probably the resemblance was intentional, for protection. I cannot recollect any nest being so inconspicuous in appearance. It was rather loosely put together, and made mostly of coarse, dry grass-stems, with a few dry leaves and old flower heads and stalks intermixed. It was well lined with feathers, among which were many blue, green, and red ones from Rosellas and Yellow-banded Parrakeets. The eggs were three in number, of a buffish-salmon tint, with a clouded zone at the larger end of a darker shade. They much resemble the plate (11) in Mr. A. J. Campbell's "Nests and Eggs" of the Striated Field-Wren (*C. fuliginosis*), but the spots were not so well defined, and the small end not so pointed, as in the plate. Although I had twice seen the bird leave the nest, and had no doubt as to its identity, I thought it best to be absolutely certain, so concealed myself about 10 yards from the nest. In 20 minutes the female suddenly appeared on a dry stick that lay close to the nest, having crept so far, quite unobserved, along the ground. Before I could shoot she suddenly appeared, as if by magic, on a twig within 4 feet of my elbow, and immediately afterwards the eggs were identified beyond doubt. The song of the male bird is very similar to that of *C. campestris*, with which I was long familiar in the north-west of this State, and is a very pleasant and melodious one.—TOM CARTER. Wensleydale, Broome Hill (W.A.), 28/8/08.



CAN GULLS DIVE?—Lately this subject has been discussed through "Nature Notes and Queries"—a column weekly in a daily paper, *The Argus*—and to my way of thinking it is one that is apt to be rather confusing, especially to those not knowing the difference between birds scientifically known as divers and those that simply perform a dive brought about by momentum.

One contributor to these notes stated that he witnessed many Pacific Gulls (*Gabianus pacificus*) rise into the air, and the momentum gained in their downward flight enabled these birds to secure their prey about 4 feet below the surface, and, as far as he was concerned, settled the question regarding this particular species as a diver. Acknowledging that performances like these come within the meaning of the word dive, this does not certify that they belong to the family of divers. Because a bird rises into the air and the momentum acquired in its downward course enables it to dive below the surface and secure its prey at a depth no greater than the momentum thus gained enables it to reach, and upon that power being spent is forced back to the surface, actions like these do not in my opinion classify them among the divers. For example, take a glance at any of the birds belonging to such genera as *Phalacrocorax*, *Plotus*, *Podiceps*, *Anas*, *Nettion*, *Catarrhactes*, and others—why, a single glance is enough to satisfy the most pessimistic observer that these birds are specially adapted and moulded by nature for diving, also swimming while submerged. Take the wings of a diver: the shoulders are set well forward, while the primaries are short; and the legs are set well back. Have the Gulls Terns, or Gannets these qualities? No.

Any naturalist who has exercised any degree of observation knows that the swimming of birds is nothing more than a walking in the water, where one foot succeeds the other, as on the land, while under water they impel and row themselves forward by a motion of their wings as well as by the impulse of their feet. These actions I have frequently watched while attempting to secure Black Duck (*Anas superciliosa*) that I have wounded upon a clear pool of water. Although well acquainted with the Gulls, Terns, and Gannets, and upon several occasions having slightly winged one of these birds, I have never yet seen a single bird attempt to go under while trying to evade capture. The question arises—Are they able? The Silver Gull (*Larus novæ-hollandiæ*) and Terns, in performing this dive of theirs, upon reaching the water always, as far as my observations go, open their wings—an action, I take it, that lessens the shock and at the same time prevents them from going under. With the Gannets it is just the opposite—they keep their wings closed, thus enabling them to dive to a considerable depth. Regarding Terns, although these birds are web-footed it is rarely they are

seen resting upon the water, their resting-place being either a spit of sand or a rock. These graceful birds flit over the waters, and it is partly through their resemblance in flight and Swallow-shaped tail that they get the name Sea-Swallow. The food of these birds consists chiefly of small fish, which they pounce upon; also molluscs and insects. Gulls, in my estimation, are nothing but scavengers of the high seas.

In conclusion, I trust that I have made myself clear in attempting to define what I consider is the difference between birds that dive by momentum, such as Gulls, Terns, and Gannets, and those which nature has physically moulded for and are known to ornithologists as divers.—C. F. COLE.

\* \* \*

THE RAVEN AT CHARLOTTE PLAINS.—Bird-life as a whole is comparatively quiet in the vicinity of this town (Maryborough) at present, perhaps the liveliest quarter being the open country at the Charlotte Plains (some 12 miles out), and in that locality there is more quantity than variety.

A Word for the Crow.—With the exception of the ubiquitous White-backed Magpie, the most noticeable bird on these plains is the Crow (*Corvus coronoides*).\* This bird is always very plentiful hereabouts, but this year they are simply swarming. The recent extreme cold, following hard upon the unusually dry autumn, has been the means of killing off scores of sheep and young lambs, and this is the reason of the Crows being so numerous.

Crows as Scavengers.—Almost every paddock is studded with the dead bodies of the unfortunate animals, and on each carcass is invariably perched half a dozen Crows, tearing off and eating the flesh. In each case the eyes of the beast are always the first to go; then the wool is pulled off, the skin torn open, and the flesh eaten to the last scrap. If a Hawk or any other bird comes near the feasting Crows, the latter attack the intruder in a body until it is driven off.

Fox *v.* Crow.—We were fortunate enough to observe a decidedly interesting chase, illustrating the pugnacious disposition of these Crows, a few weeks ago. Driving along a road adjoining an open paddock, we were surprised to see five Crows swooping viciously at a fine big fox, which, judging by its actions, fully realized the seriousness of the situation. Adopting the usual ruse of a small animal when thus attacked, Reynard would wait for the Crows to swoop, crouching low on the ground, and each time the birds rose in the air he dashed on for about 20 yards,

\* Read Raven (*Corone australis*).—EDS.

till the second party of birds forced him down again. Had there been but one or two birds attacking, the fox would have no doubt escaped easily, but five had a decided advantage over him, for when two birds struck at him together the other three were ready to dart down on the ascension of the first two. Every bird struck at the animal's head, but as the fox kept this flat on the ground, he was not harmed. This "duck and run" procedure was kept up for the space of some 300 yards, when Reynard reached a sanctuary in the shape of a clump of thistles. The disappointed Crows circled round for a while, cawed dismally at the landscape, and departed.

Crow *v.* Rabbit.—This is not the first time I have witnessed such an exhibition of pugnacity on the part of the Crow. A few months ago I saw a somewhat similar chase with a rabbit as central figure.

The Usefulness of the Crow.—These two animals, the fox and rabbit, are the two principal pests of the farmers hereabouts, and if the Crow (or any other bird) could be proved to be instrumental in diminishing their rapidly increasing numbers the bird would be far more favourably looked upon than it is just at present.—A. A. CHISHOLM. Maryborough, Vict.

\* \* \*

AMONG BRISTLE-BIRDS.—November has many attractions in the field. Taking advantage of a public holiday early in the month, two of us wheeled away from Geelong to the south coast outside Port Phillip, covering the distance in about three hours against as stiff an ocean breeze as one cares to face on the cycle. Thence south-west we followed the coast down toward Cape Otway. Evening was coming on, the wind was rising, with every promise of a stormy night, and on we hurried, skirting the steep cliffs, anxious to find suitable cover for the night. Necessarily we travelled "light," having a little plain fare and a rug apiece, ready even to do without water in this manforsaken tract, that we might observe in its curious home the Bristle-Bird (*Sphenura broadbenti*). Leaving the track at the top of a spur, we made down to the coast, a mile distant, and there met some thick brakes of tea-tree just as the last light of evening waned, but not too late to hear a welcome loud-voiced warble of a Bristle-Bird not far away.

The gale increased, the sea lashed on the long line of reef off shore, where the *Inverloch* had perished some months previously, and the waves moaned on the beach, where they had cast up in all odd corners the wooden wreckage of the vessel. In the thickest part of the tea-tree we passed the night. By the side of a roaring fire, fed from the wreckage on the beach, we lay down to rest, though not to sleep much, for we were alter-

nately roasted on one side and frozen on the other, so cold and draughty was our camp, and night watch was called frequently to add more fuel to the fire. However, the gale died away in the early morning, and the dawn broke fair and promising, with Singing Honey-eaters whistling their tuneful calls. The first bird out of the tea-tree brake saw us demolishing our morning meal, and by the time the sun came up, thrusting his rays like long red fingers through the horizon clouds, the Bristle-Birds were awake and calling to one another about the scrub.

The tea-tree here is not the coastal broad-leaf *Leptospermum* common on the east shore of Port Phillip, but a fine-leaved bottlebrush-flowering *Melaleuca*. It grows shorter and denser, it branches much from the ground, and the tops in some places grow so thick and matted that sunlight is excluded. They are very difficult to push through, often the easiest way to examine them being to crawl about beneath. Clumps and belts of this tea-tree clothe the wind-blown slopes of Bristle-Bird Point, otherwise known as Point Addis, a triple-headed limestone bluff about half-way between Port Phillip Heads and Cape Otway. This seems to be the limit to which a small party of Bristle-Birds have ventured out from their tangled forest home in Cape Otway. It is, in fact, remarkable that such a unique bird, and a ground dweller in heavy forests, should find congenial surroundings in a patch of wind-swept scrub by the sea-shore. We examined the patches and belts of tea-tree for some two miles south-west, and in all were located one or more pairs of birds. In some places the tea-tree approaches on to the high-water mark, and then it is thickly matted in with long coastal sword-grass, which also makes a tangled home for the Bristle-Bird. That morning the persistent calls of a bird in the clump where we passed the night led us to make a search therein first, with the result that its bulky nest was discovered, containing one large, red-speckled egg. A continued search revealed the fact that there were in all five nests in the clump, presumably all belonging to the same birds; three were of last year or older, and one other was this season's, having had a fledgling in it. It had also an addled egg, which, though it had lost some colour, made a good cabinet specimen. Here was a point that emphasized itself the more we became acquainted with the Bristle-Bird: one egg in every clutch was infertile. Several old nests were found, like this one, with an addled egg. One nest contained a young bird and an addled egg, and in two nice pairs of eggs one was partly incubated and the other not so. It would be interesting to know if this occurs in the Otway, the true home of the species. There may be some food element lacking here.

The notes of the Bristle-Bird have a great likeness to those of the Pilot-Bird in being loud and melodious—the call-song is

almost identical in the two birds, except that one is in a sharper key. The Bristle-Birds feed on beetles, earth grubs, and cranberries, and could be photographed in their home with ease. The Bristle-Bird is found at Anglesea, and also at Airey's Inlet, two tidal creeks between Point Addis and the Otway forest. There appear now to be no further belts of tea-tree north of Point Addis into which the birds can spread, so this fact will always keep them a remarkable restricted colony, which we trust will be of perennial interest to bird observers, and which we hope (being the nearest Bristle-Birds to Melbourne) will not suffer decimation at the hands of city folk.—A. G. CAMPBELL.

[N.B.—This is additional to notes in *Emu*, January, 1907, page 134.—A. G. C.]

\* \* \*

NOTES ON *AMYTIS (AMYTORNIS) VARIA*, OR MARLOCK GRASS-WREN.—When walking through one of my paddocks on 13th June, 1908, hoping to get a shot with a 440 Winchester rifle at some Wedge-tailed Eagles (*Uroaetus audax*) that were killing lambs, my attention was attracted by what, at first glance, appeared to be a small banded ant-eater (*Myrmecobius fasciatus*) running, as is their custom, at great speed with tail erect from some rough ground towards a clump of marlock scrub. A driving rain was falling at the time, which helped to form this impression, but immediately after a dark-coloured bird ran or fluttered close behind the supposed ant-eater, and then I knew I was watching something uncommon in bird-life. The clump of marlock was only about 12 yards by 2 yards, but a considerable amount of trampling heavily through it was necessary before the birds darted out from almost under my feet. One of them hopped on to a dead log at a short distance, and gave me a good view, for a moment or two, but, not thinking it any use to risk a shot with the 440, I hurried home (1½ miles) for my gun, but rain and wind increasing caused me to defer further investigations for that day. On three occasions shortly after the above date I systematically tramped all over the small stony hillock where the birds were first seen, but only once sighted them. They darted out of the same small patch of marlock as at first, after much trampling, and, coming out somewhat behind me, gave no chance of a shot. As with *Amytis striata* (which I had met in the north-west of this State), the speed of the birds is extraordinary. 21st June found me at the same locality, and almost immediately one bird was sighted in a fresh patch of marlock, but for some little time it gave no chance of a fair shot, and then disappeared in a tangle of fallen white gum limbs and dead leaves, which was surrounded by clumps of marlock in full bloom. Among these blooms numbers of *Meliphreptus brevirostris (leucogenys)*, Milligan) were busily feeding, and a bullying Wattle-Bird (*Acanthochæra carunculata*) kept making angry dashes

through them to drive them away from the honey-laden flowers. Apparently the commotion above frightened the Grass-Wren, for it suddenly darted out, and, pausing momentarily in the shelter of the marlock stems, gave me the chance of a successful shot. Several subsequent visits failed to reveal any more of the Grass-Wrens, and it seems to me that the pair originally seen had, for some reason, been driven from, or left, their usual haunt, and temporarily lived on this small, barren hillock, over which I have tramped scores of times, no other marlock or similar class of scrub growing within  $2\frac{1}{2}$  miles. *Query*, What became of the other bird? Probably a cat had taken it, as domesticated cats, gone wild, have been seen near that hill on different occasions. Two persons used to the bush, to whom I have shown the specimen secured, assure me they have seen the same bird (or very similar), but always in marlock, which, with mallee, mallet, and similar growth, stretches for miles east of the Great Southern railway. A description of the bird shot was read at the meeting of the Field Naturalists' Club of Victoria on the 10th August, and a detailed account has appeared in *The Victorian Naturalist* for September (vol. xxv., p. 86). Since the description mentioned above was forwarded by me, the Director of the Perth Museum has courteously sent me a skin of *Amytornis gigantura* (*megalurus*, Sharpe) on loan, for comparison with mine. *A. gigantura* was procured at Day Dawn in 1903, and described by Mr. A. W. Milligan as new. Day Dawn is situated 450 miles almost due north from Broome Hill, and is a much hotter and drier district than this, the average rainfall there being probably considerably less than half of what occurs here—viz., 8 inches against 22. As a full description of *Amytornis varia* has already been published, there is no occasion to repeat it here, but comparison with the skin of *gigantura* shows the following points of difference in *Amytornis varia*:—The whole plumage is much darker and richer in tone, the head especially being almost black, and the abdomen and flanks much darker than in *gigantura*, where the centre of abdomen is very light fawn. No trace of the rich chestnut side patches which occur on each side of the chest of *gigantura*. No reddish lores as in *gigantura*. The white striations on the head, hind neck, and mantle are much more numerous, and they are also more pronounced on the flanks in *varia*. Measurements of tail and wings are considerably larger in *varia*. I may remark that the numerous small bars across the tail feathers occur in *both* skins, and apparently are present in most of the species of *Amytornis*, though not always mentioned in descriptions by writers. With regard to "marlock," I have adopted this spelling, as Mr. Milligan used it in connection with his trip to the Stirling Ranges, and Mr. A. J. North has spelt it marlock in describing the scrub where Mr. C. Masters obtained specimens of *Malurus pulcherrimus*, although I am informed by a botanical expert that, according to philologists, the accepted orthography of the word is "maalok" or "maaloch," an aboriginal word signifying thicket, and that to spell it "mar" is wrong (although aborigines have no written

language), and that the shrub appears to be a variety of *Eucalyptus obcordata*. Whoever is correct, there is no doubt that the thickets composed of it are "happy hunting grounds" for ornithologists. Last week I secured in that growth specimens of *Malurus pulcherrimus* and of an Emu-Wren (*Stipiturus malachurus*).\*—TOM CARTER. Wensleydale, Broome Hill (W.A.), 31/8/08.

### From Magazines, &c.

"A NIGHT WITH THE BIRDS ON LAWRENCE ROCKS" is the account of a romantic outing by Mr. A. H. E. Mattingley, C.M.Z.S., which appeared in *The Victorian Naturalist* for May, vol. xxv., pp. 12-24. Lawrence Rocks are situated at the entrance of Portland Bay, Victoria, and are the breeding-places chiefly of Gannets, Cormorants, Petrels, and Penguins. Mr. Mattingley took his excursion last Christmas, when he found the majority of the birds with downy young. The article is accompanied by reproductions from excellent photographs, namely:—"Gannet (*Sula serrator*) Rookery," showing a congregation of about 400 birds, with some on the wing, and "Dove-Petrel (*Prion desolatus* (?)) and young." General readers, as well as naturalists, will enjoy Mr. Mattingley's very descriptive and entertaining article.

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BIRDS OF INKERMAN (N.Q.)—An article, interesting to Australian ornithological students, by Mr. Collingwood Ingram, F.Z.S., appears in the July (1908) *Ibis*, entitled "The Birds of Inkerman Station, North Queensland." The collection contains 93 species, including two new to science—namely, *Neositta magnirostris* and *Sphecothebes stalkerii*.

Inkerman is situated approximately 50 miles south-west of Townsville and about ten miles from the Burdekin River, and is described as "covered with an open forest, but in many places the gum-trees are very thinly scattered over the ground. The two commonest species, and those that give character to the landscape, are the Moreton Bay ash and the blood-wood; the former being by far the most numerous. But here and there are also trees of other kinds—pandanus, leichhardt, acacia, bottle-tree, and others; although, of course, the typical *Eucalypti* always predominate. Situated at wide intervals over nearly the whole of the station are narrow sheets of water—'lagoons,' as they are locally termed. These are often deep and sunk between steep banks, and not a few are thickly grown with blue water-lilies or with the more luxuriant lotus-lily."

\* The Western Australian form of the Emu-Wren differs from the eastern bird by the general upper surface being lighter coloured (greyish instead of brownish), and by the width of each curious tail-feather being only about half the width of those of the eastern examples.—A.J.C.

Although the majority of the birds were obtained at Inkerman, Mr. Stalker, the collector, obtained some on Mount Elliot, at the back of Townsville, and on Mount Abbot, in the Bowen district. It was on the former mount that the new *Sphecoheres* was found—a somewhat remarkable discovery so near a populous town. Two male adults were shot during December 1907, from a flock of 68,\* and are stated to be most nearly allied to *S. salvadorii* of New Guinea.

The new Tree-runner—*Neositta magnirostris*—of which an excellent coloured plate is given, was procured at Inkerman, 14th March, 1907. It is closely allied to *N. striata*, “but differs from that bird by its generally larger size, and especially the longer and more massive bill,” &c.

## Correspondence.

### THE CAPE BARREN GOOSE.

To the Editors of “The Emu.”

SIRS,—I quite agree with Mr. Armstrong that the Cape Barren Goose is not holding its own. I have been in close touch with this fine bird for the last 20 years on the lakes and swamps near Mount Hamilton, in this Western District of Victoria, which is its chief stronghold. Mr. Frank Smith is evidently speaking of this same country when he speaks of his 1,000 birds, but I doubt if this number could be mustered. I know that flocks of 200 can be seen on one or two favourite feeding grounds, perhaps nearly as many as 20 years ago; but I also know of other feeding grounds not quite so good that are now practically deserted. What has become of the large flocks that used to frequent the shores of Lakes Corangamite, Gnarpurt, and the lakes north of Camperdown? Would Mr. Smith say that they are still plentiful there? I am told—but my information may not be correct—that these birds used to frequent portions of the Gippsland lake district, and some saltings near Port Fairy, and some portion of South Australia, and that they are not seen there now. Being of such a wary nature, it will be a long time before this bird is exterminated, but before that danger arises it must be protected all the year round.

It is pleasing to hear that Messrs. Maclaine Bros. do not break the eggs on their islands, but if reports are true there are some person or persons who do.

I only know of one instance of these birds nesting wild in this district, but Mr. Dennis, of Eeyeuk, has bred them for some years in captivity.—I am, &c.,

ERNEST G. AUSTIN.

\* ? 6 or 8.—EDS.



*To the Editors of "The Emu."*

SIRS,—In *The Emu*, vol. vii., page 36, Mr. T. Hurst mentions having seen two birds along the banks of the Tamar in whose identity I am afraid he was mistaken. First he mentions a flock of from 20 to 30 Cape Barren Geese feeding in a stubble field near the river. I am very well acquainted with the Tamar, especially with its west bank—where Mr. Hurst's observations were made—but never have I seen or heard of Cape Barren Geese being found there. I know that several settlers have flocks of the common grey Geese, and these feed along the river, sometimes wandering long distances from the homesteads. I am strongly of opinion it was a flock of these he saw.

The second bird mentioned is the Stone-Plover. A flock of some 30 individuals is alleged to have been seen feeding in a stubble field. Here, again, I am afraid is an error in identification. After the note appeared in *The Emu* I spoke to several familiar with the district, and who would know the species if seen, but they all positively asserted they had never heard of or seen even a single Stone-Plover anywhere down the Tamar. In this instance I cannot hazard a guess at what Mr. Hurst really did see, but I feel very confident in asserting that the birds were *not* Stone-Plovers.

I regret the long time that has elapsed between the publication of Mr. Hurst's notes and my comments on the same, but the matter completely slipped my memory until Mr. Gregory Mathews, to whom I had mentioned the matter, urged on me the necessity of sending a note along.—I am, &c.,

FRANK M. LITTLER.

Launceston, 31/8/1908.

[Having perused the above letter, Mr. Hurst replies:—"I desire to state that I receive Mr. Littler's remarks in the best possible spirit, but I cannot reconcile myself to the suggestion that the birds I saw were other than those already stated by me. In support of my statement about the Cape Barren Geese, I mentioned the fact at the time to some friends (sportsmen) in Launceston. They expressed no surprise at the occurrence, and stated that Cape Barren Geese were not infrequently seen down the Tamar.

"*Re* the Stone-Plover, I heartily agree with Mr. Littler to the extent that it would be a most difficult undertaking to 'hazard a guess' as to what the birds really were if not Stone-Plovers."

The editors would like to add that Mr. Hurst is an experienced field observer, sportsman, and aviculturist, and unlikely to make a mistake in the identification of such familiar birds. It was autumn when Mr. Hurst made his observations—a season when

the Cape Barren Geese leave the mainland of Australia for the islands. Possibly the flock seen on the Tamar were migrating. Stone-Plover also flock in autumn, and have been previously recorded in Tasmania. However, Mr. Littler may enjoy the comfortable reflection that the unexpected often happens, even in one's own neighbourhood. For instance, take the discovery of the new Fig-Bird (*Sphecothebes*) shot by Mr. Stalker (collector for Mr. Collingwood Ingram) from a flock of 68 at the rear of Townsville,\* with its 15,000 inhabitants, and where every ornithologist of note visiting Queensland has collected.]

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### South Australian Ornithological Association.

A MEETING of this Association was held at the residence of Mr. A. H. C. Zietz, F.L.S., on 6th August, the host being in the chair. A letter was read from Dr. A. M. Morgan, London, stating that he was urging upon kindred scientific societies in England the necessity of the extended "National Reserve" on Kangaroo Island, with the result that the leading authorities in natural history were unanimous that if certain fauna and flora were to be preserved from extinction the larger the area reserved the better. A letter was read from Mr. John Bagot, taking exception to the theory that the Flame-breasted Robin (*Petraca phanica*) does not breed on the mainland, but departs to Tasmania to lay and rear its young, as he had known it to breed freely in his garden at Mount Lofty. Captain S. A. White and other members pointed out that this was erroneous, as the species inhabiting the hills was the Scarlet-breasted Robin (*Petraca leggia*). Mr. J. W. Mellor drew attention to the work upon Australian birds, with coloured plates, being compiled by Mr. Gregory M. Mathews, F.Z.S., &c., England, who desired that all local bird observers would assist him with notes. Mr. J. W. Mellor gave extracts from a paper written by Mr. A. H. E. Mattingley, C.M.Z.S., Melbourne, upon "Cormorants in Relation to our Fisheries," in which the writer mentioned why the much-abused Cormorant should not be destroyed, as by close observation he had found that these birds do much good by keeping down the enemies of the fish and their ova. It was agreed that Mr. Mattingley's notes and observations were of great importance. The subject of study was the family *Artamidae*, commonly known as Wood-Swallows, of which 10 or 12 members are found in Australia. These birds, it was pointed out, were totally insectivorous, and for this reason were of extreme usefulness, and had consequently been protected in this State. Mr. A. H. C. Zietz showed a number of these birds, six species being from Australia. Captain S. A. White exhibited several species, notably the Little Wood-Swallow (*Artamus minor*), collected in the interior in the early days by his father, the late Mr. Samuel White, of the Reedbeds; also the Black-faced Wood-Swallow (*A. melanops*), discovered by the same naturalist at St. A'Beckett's Pool, lat. 28 deg. 30 min., on 23rd August, 1863. Captain White also showed the historic record and coloured plate of the bird described by Gould from the original specimen, which stated that the birds cling in bunches to the branches like bees, and were also seen at Chambers Creek and Mount Margaret. Mr. J. W. Mellor stated that the common kind of Wood-Swallow (*A. sordidus*) had been frequenting the Adelaide plains lately, and had been noted at the Reedbeds.

\* See *Ibis* (July), 1908, p. 480; also *Emu*, this issue, p. 106.

## Bird Observers' Club.

THE monthly meeting of the Club was held at the residence of Mr. D. Le Souëf, Zoological Gardens, Parkville, on 25th March. There were present Messrs. Mattingley, Ross, A. J. Campbell, Tregallas, Chandler, Barrett, Nicholls, R. P. Godfrey, Cole, M'Lennan, and Howe (hon. sec.) The host occupied the chair. Mr. R. W. Armitage was elected a member, and Messrs. Chisholm (Maryborough) and M'Lennan (Pine Plains) country members. Mr. Christian contributed field notes from Raywood (Vic.) The subject for discussion was Cuckoos. Mr. Cole read a paper entitled "Observations on the Finch as a Foster-Parent to the Cuckoo," in which he negatived the idea of the Finch successfully rearing the Cuckoo. Mr. A. H. Mattingley read a paper on the Cormorants in regard to fisheries, and contended that the bird does more good than harm, inasmuch as though fish were undoubtedly taken by the bird in question, it destroyed great numbers of eels and crustaceans, the greatest enemies of the fish ova. The exhibits were many and beautiful. Mr. Le Souëf exhibited the egg and nest of the *Paradisaea raggiana*, hitherto unknown to science, on behalf of Mr. Atlee Hunt. Mr. J. A. Ross showed specimens of six Victorian Cuckoos. Mr. Chandler's exhibits were the male and female of the Masked Wood-Swallow (*Artamus personatus*), and our host showed the type skins of the Fern-Wren, Pale Flycatcher, Pheasant Flycatcher, and Gay-tinted Honey-eater, all kindly loaned by the authorities of the Brisbane Museum. Mr. Le Souëf also showed the eggs of every known variety of Cuckoo found breeding in Australia. Messrs. Cole and Howe exhibited skins of Little Tern, Tringa, and Stint, and eggs of the former found in Port Phillip Bay.

The May meeting of the Club was held at Oxford Chambers, Bourke-street, Melbourne, and 11 members accepted the invitation of the hon. secretary (Mr. F. Howe). The host was voted to the chair. The resignation of Mr. J. A. Kershaw was accepted with regret. A suggestion that seemed to find favour with members was made by Mr. Mattingley (on behalf of a member not present), that the Club have its own room, where members could meet. The matter was discussed, and adjourned for further consideration. Mr. Cole exhibited mounted specimens of the Darter, Little, Little Black, and White-breasted Cormorants, this family forming the subject for discussion. Mr. Chandler's exhibits were skins of the Tawny-crowned and Sanguineous Honey-eaters, Frontal Shrike-Tit, Chthonicola, and Little Grass-Bird. Mr. C. F. Cole read a paper on "Cormorants," and his observations along the coast and inland waters were intently listened to and appreciated, Messrs. Mattingley and Le Souëf endorsing his remarks as to the good done by these birds. Mr. Chisholm (Maryborough) forwarded a paper on the White-eye (*Zosterops carulescens*) and Red Wattle-Bird (*Acanthochara carunculata*). Mr. Robert Hall's "Suggestions on Migration" was read by Mr. Mattingley, showing an admirable plan for taking notes on this interesting question. Mr. E. Christian sent field-notes, and mentioned the Koel (*Eudynamis cyanocephala*) as an autumn visitor to Raywood (Vic.)

The quarterly dinner of the Club was held at the Mia-Mia Tea Rooms, Collins-street, Melbourne, on 24th June, when only seven members were present, but later in the evening six others arrived. Mr. Mattingley presided. Mr. Fred Godfrey tendered his resignation as a member of the Club. Mr. Godfrey was one of the original founders of this Club, but as he was leaving the colony for New Zealand, his resignation was accepted with regret, and the hon. sec. was directed to write expressing the Club's regret at his loss. The subject for discussion was "Scrub-loving Birds." Mr. Cook, of Poowong (Vic.), sent an interesting paper on the Lyre-Bird, and a pencil drawing showing the birds going to roost was considered unique. Messrs. A. G. Campbell and F. P. Godfrey both sent papers on the Bristle-Bird (*Sphenura broadbenti*). Mr. F. E. Howe, hon. sec., read a paper on the Pilot-Bird (*Pycnoptilus floccosus*). Mr. C. F. Cole, besides exhibiting skins

of the Lyre-Bird (*Menura victoriae*) and Cuckoo-Shrike (*Graucalus melanops*), contributed a paper on the last-named variety, explaining the manner in which the bird obtains its food, and showing the amount of good work done by it amongst the larvæ of the case-moth (*Psychidæ*). Messrs. Tregallas and Chandler read papers on the habits of the Coachwhip-Bird (*Psophodes crepitans*). Mr. C. L. Barrett drew attention to the Importation of Plumage Prohibition Bill introduced into the House of Lords by Lord Avebury. The object of the proposed Act was to check the growing and wholesale destruction of birds in all parts of the world, and their importation into the United Kingdom. An idea of the numbers of birds imported into England in 1907 was given by Mr. Barrett, who said that the catalogue at one sale included 19,742 skins of Birds of Paradise, 1,386 Crowned Pigeons' heads, and many Lyre-Birds' tails at another. It was decided to write to Lord Avebury in appreciation of his action.

The ordinary monthly meeting of the Club for July was held at the residence of Dr. G. Horne, Clifton Hill, with a fair attendance. Dr. Horne presided. Field notes and papers were received from Messrs. Christian, Raywood, and Chisholm, Maryborough. After many other field notes were discussed, Mr. C. F. Cole read a paper entitled "Do Gulls Dive?" and Mr. Chisholm's paper was in favour of protecting the Crow or Raven, as they do good work as scavengers. Both papers were well received, and opened up lengthy discussion. Mr. A. H. Mattingley, C.M.Z.S., read an interesting and instructive paper on "The Birds of Lawrence Rock," which was illustrated with many excellent lantern slides, showing the phases of plumage of the young of Penguins, Terns, Gannets, and Petrels. Dr. Horne exhibited a curio in the shape of a Swallow's nest built on the handle of a pair of sheep shears which had been stuck into the wall of a stable. Mr. D. Le Souëf, C.M.Z.S., showed a series of Southern Stone-Plovers' eggs, varying in colour from light grey through various shades of brown to dark green, and explained that the eggs almost invariably were placed on the soil that harmonized best with them. Whether the bird knows this, or it is due to the food obtained, were questions that were discussed. Miss Bowie interested the members when she told how a pair of Black-breasted Plovers (*Zonifer tricolor*) that are in Dr. Horne's aviaries were nest-making.

## Great Forward Movement in Bird Protection.

(Continued from p. 91.)

REGARDING the protection of game in Tasmania, the resolution passed at a recent meeting of sportsmen, recommending that a Commission be appointed to protect and preserve the native fauna of Tasmania, was placed before the Premier (Hon. J. W. Evans, C.M.G.) on the 28th September, 1908, by a large and representative deputation. Included amongst those present were Hon. A. Morrisby, M.L.C., Messrs. F. B. Rattle (who introduced the deputation) and B. Watkins, Ms.H.A., Dr. Gibson, Bernard Shaw, and A. D. Watchorn (Royal Society), A. L. Butler (Tasmanian Field Naturalists' Club and Australasian Ornithologists' Union), P. S. Seager, I.S.O. (Tasmanian Tourist Association), L. M. Shoobridge and L. C. Thirlwall (Tasmanian Farmers and Stockowners' Association), T. A. Tabart (Chief Inspector of Stock), Robert Hall, F.L.S. (Curator of the Tasmanian Museum), S. Salmon (East Coast landowners), and several others.

After several of the members of the deputation had spoken at

length, the Premier said he fully sympathized with the movement, and was particularly pleased to see that those interested were willing to assist the Government in bringing about the desired reform, and in giving effect to the provisions of any Act that might be passed. A large number of Acts were placed upon the statute-book, but in many cases great difficulty was met with in their administration, not only through lack of funds, but owing to the absence of such assistance as was offered in the present case. He thought those who had spoken for the deputation had said sufficient to force home the fact that it was time something should be done to place the matter of protecting the native fauna on a proper footing, and while he and his colleagues were quite prepared to do all they possibly could to meet the wishes of the deputation, it was necessary to point out that the Parliamentary draftsman at present could not prepare the bills which the Government contemplated bringing forward. He would therefore suggest that a committee, consisting of representatives of the different interests concerned, should be appointed for the purpose of drawing up recommendations, which they could embody in a draft bill, to be submitted to Ministers. If that were done, the chances of getting something definite done during the current session of Parliament would be very much greater.

[NOTE.—The deputation from the Council of the A.O.U. that waited on the Hon. the Prime Minister at Melbourne on the 4th August represented the following societies:—Queensland: Central Bird Protection Association and members of A.O.U. (per Mr. W. M'Ilwraith). New South Wales: Field Naturalists' Club and members of A.O.U. (per Mr. L. Harrison). Victoria: Bird Observers' Club and Council and members of A.O.U. South Australia: National Museum (per Mr. A. Zietz, F.L.S.), English Birds Protection Society, local branch (per Sir Samuel Way, Bart.), and members of A.O.U. (per Mr. J. W. Mellor). Western Australia: Perth Museum and members of A.O.U. (per Mr. B. Woodward, F.G.S.) Tasmania: Field Naturalists' Club (per Mr. E. Elliott), Royal Society (per Col. Legge, F.Z.S.), and members of A.O.U. (per Mr. A. L. Butler).]

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### Notes and Notices.

“THE COLOURED FIGURES OF THE BIRDS OF AUSTRALIA.”  
—In connection with the notice to members of the A.O.U. in the last number of *The Emu* (p. 52), Mr. Gregory M. Mathews desires to intimate that he will be glad to receive now notes (however meagre) concerning the first hundred species on his “Handlist” (*i.e.*, Supplement *Emu*, vol. vii.)

PROPOSED INTRODUCTION OF LYRE-BIRDS INTO TASMANIA.  
—The following letter to the Hon. the Chief Secretary, Hobart, has been forwarded by Mr. E. A. Elliott, hon. secretary

of the Tasmanian Field Naturalists' Club :—"I have the honour to inform you that I have been delegated by the Australian Ornithologists' Union to bring under your notice the desirability of introducing Lyre-Birds (*Menura*, sp.) into Tasmania from Victoria. Owing to the destruction of these birds by foxes on the mainland, they are threatened with extermination, and in order to prevent this it is proposed to import some into Tasmania, where the deep mountain gullies with fern glens would make ideal resorts for these unique birds. It was for this purpose that our Club recommended their inclusion in the schedule of protected birds under the *Game Protection Act*. It is desired that this Government communicate with the Government in Victoria, where those interested will assist in the collection of a number of Lyre-Birds and send them to this State. Members of this Club would be glad to undertake the liberation of the birds upon their arrival in places suitable for their breeding, and where they would be free from molestation."

### Special Notice.

#### EXPEDITION TO BASS STRAIT ISLANDS.

THE hon. secretary (Mr. A. H. E. Mattingley) begs to announce that he is arranging for the charter of a regular passenger steamer for a fortnight's cruise after the termination of the annual session in November. The steamer will be installed with electric light, and be provided with steward, stewardess, and all the comforts of a mail boat.

It is proposed to visit several of the islands in Bass Strait which have not yet been scientifically explored. These islands are especially noteworthy on account of having once formed a land bridge between Australia and Tasmania, and are on the fly-line of migrating birds. Apart from the scenery, which is exceedingly fine, many of the islands contain wonderful sea-bird rookeries, notably of Penguins, Mutton-Bird and other Petrels, Albatross, Gannets, Gulls, Terns, Geese, Cormorants, &c.; not to mention seals.

Many of the islands are close to one another, with calm water between. These "waters of rest" will add to the comfort of sleeping and dining aboard, as the vessel will be entirely at the disposal of members throughout the trip.

The expedition should leave Melbourne on the evening of 24th November, and, in order that the steamer may be definitely chartered, it is absolutely necessary that *intending members* (ladies and gentlemen) should *notify* the hon. secretary (the leader) *at once* of their intention of joining.

The total expense will probably average about £8 per head, but will not exceed £10.

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THE objects of the Society are the advancement and popularisation of the Science of Ornithology, the protection of useful and ornamental avifauna, and the publication of a magazine called *The Emu*.

The business of the Society shall be conducted by a Council, consisting of a President, two Vice-Presidents, Secretary, Treasurer, Editors of *The Emu*, and six members; each office-bearer and member of the Council shall retire at the end of each financial year, but shall be eligible for re-election.

The Annual Meeting shall be held in one or other of the principal towns of the different States, such State to be decided at the previous Annual Meeting.

Every member shall be required to pay an annual subscription of fifteen shillings, due on the first of July each year. (The usual exchange to be added to Foreign, Interstate and Country cheques, drafts, &c.)

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A Quarterly Magazine to popularize the Study and Protection  
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OFFICIAL ORGAN OF THE AUSTRALASIAN ORNITHOLOGISTS' UNION.



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## ANNOUNCEMENTS.

Articles (technical papers should if possible be type-written) and communications intended for publication, also books and publications for notice, should be addressed to the Editors, *The Emu*, c/o MR. A. J. CAMPBELL, Custom-House, Melbourne.

MSS. of general articles should reach the editors at least six weeks prior to the issue of the number for which they are intended.

Occasionally, when funds permit, it is intended to issue Coloured Plates of hitherto unfigured Australian Birds. Voluntary subscriptions to a "COLOURED FIGURE FUND" are courteously invited from members.

The price of *The Emu* to non-members is 4/- per copy. Extra copies may be had by members at half-price.





# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. VIII.]

1ST JANUARY, 1909.

[PART 3.

## *Malurus dulcis* (Lavender-flanked Wren), sp. nov.

BY GREGORY M. MATHEWS, F.L.S., F.Z.S., M.B.O.U.

(Plate B.)

THIS pretty little species was described from a pair of specimens in the Tring Museum, and I am indebted to the Hon. Walter Rothschild for permission to name it.

Six males and four females were procured by Mr. J. T. Tunney in the granite ranges 10 miles east of South Alligator River, in July and August, 1903 (*cf.* Hartert, Nov. Zool., xii., p. 223, 1905). Dr. Hartert identified the species as *M. pulcherrimus*, Gould, but a further examination showed that the Alligator River specimens are different from the true *M. pulcherrimus*, and Dr. Hartert agrees that they must be kept distinct. The latter species has a decided tinge of blue on the throat, but *M. dulcis*, like *M. assimilis* and *M. lamberti*, has a black throat. The principal character for the separation of *M. dulcis* consists in the colour of the flanks, which are lavender-blue, not white as in *M. assimilis*, nor sandy-buff as in *M. lamberti*.

The following is a detailed description of the types of *Malurus dulcis*:—

*Adult Male*.—South Alligator River, Arnheim Land, 9th August, 1902 (J. T. Tunney; Rothschild Museum, No. 1,564). Upper surface particoloured. Crown of head shining purplish-blue, lighter, somewhat verging to deep cobalt, on the forehead; feathers round the eye and a patch of pointed plumes traversing the ear coverts enamelled cobalt; lores, cheeks, sides of face, and sides of neck black, extending in a broad band round the hind-neck, this band being followed by a band of lilac-blue; centre of the back lilac-blue, of about the same tint as the band above, but a little brighter and with white bases to some of the feathers and black tips to those which adjoin the black lower back; scapulars forming a patch of maroon-chestnut on each side of the blue dorsal patch and continued forward and downward to meet the breast-patch; lower back, rump, and upper tail coverts velvety-black; wing coverts and quills brown, with a slight shade of blue on the outer edges of the feathers; lesser coverts at bend of wing dark bluish-grey; tail feathers dark blue,

tipped more or less plainly with white, which extends along the outer web of the outermost feathers; throat, chest, and upper breast black, with a patch of lilac-blue on each side of the latter; lower breast and abdomen white, the sides of the body and flanks washed with pale lilac-blue or lavender; thighs white, with indistinct dusky bars; under tail coverts white, washed with lavender-blue; under wing coverts white; quills dusky brown below, ashy along the edges of the inner webs. Bill black; legs and feet dark brown. Total length, about 5.2 inches; culmen, 0.5 inch; wing, 1.9 inches; tail, 2.3 inches; tarsus, 0.85 inch.

*Adult Female*.—Ranges 10 miles east of South Alligator River, 4th July, 1903 (J. T. Tunney; Rothschild Museum, No. 1,286). Entirely different from the male. Bluish-grey above, from the forehead to the upper tail coverts; wing coverts brown, externally bluish-grey, a little darker than the back; quills dusky-brown, with lighter brown edges; tail feathers dark blue; lores and feathers round the eye white; ear coverts, sides of face, and sides of neck bluish-grey; cheeks and throat white; fore-neck, chest, and remainder of under surface pale buff, the sides of the upper breast light slaty-grey; the thighs rather deeper fawn-colour, as are also the under wing coverts; quills dusky below, a little more ashy on the inner webs. Bill reddish; eye brown; legs brown. Total length, 5.2 inches; culmen, 0.55 inch; wing, 1.85 inches; tail, 2.5 inches; tarsus, 0.8 inch.

The female, as I have remarked in my original paper (Bull. B.O.C., xxi, p. 100), is different from that of any other known species of *Malurus*, being of a bluish-grey colour above. The species is altogether a very remarkable one, and I have had much pleasure in having the coloured plate done for *The Emu*.

NOTE.—On looking at the skin, I think the scapulars could be raised by the male under excitement, such as displaying during the breeding season. Has anyone ever noticed this in any species of *Malurus*?—G. M. M.

## Thermometer-Bird or Mallee-Fowl (*Lipoa ocellata*).

BY A. H. E. MATTINGLEY, C.M.Z.S.

### PART II.

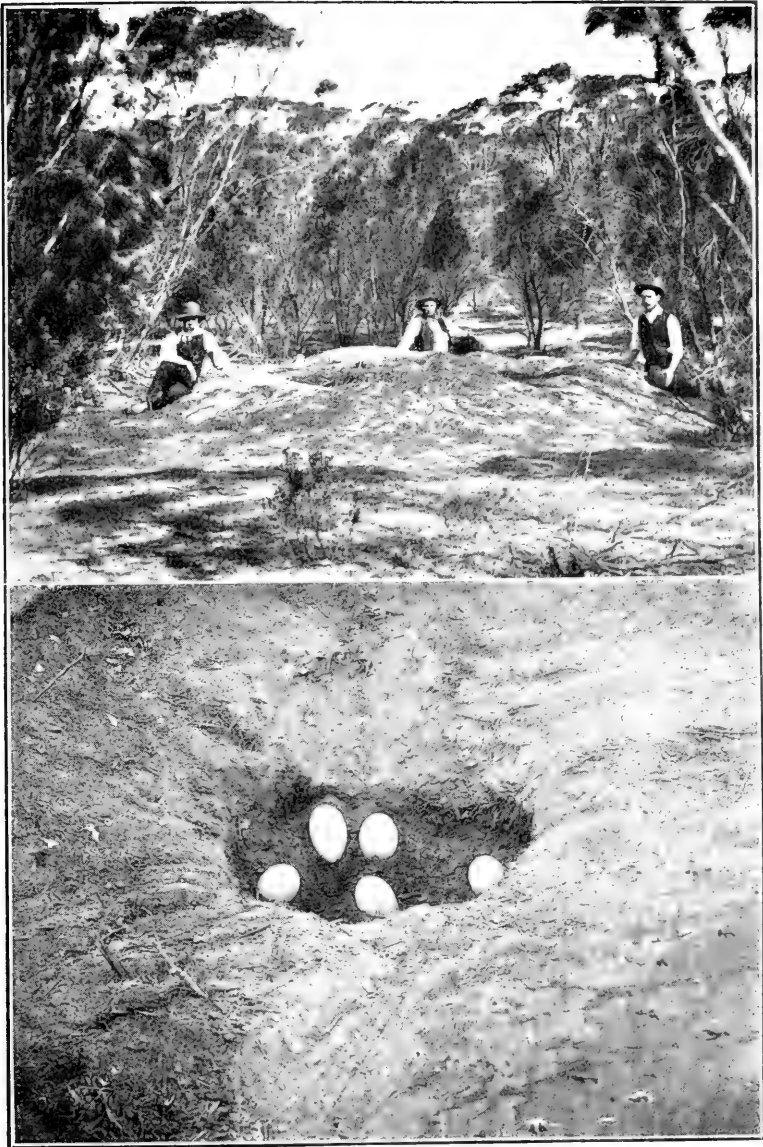
EGGS.—The *Lipoa* does not start to breed until two years old, and the first clutch of eggs laid is notably smaller in size than those laid by aged birds. It is impossible to say with any degree of certainty what is the precise interval between the laying of each egg, since in some mounds observations made show that an egg was laid every fourth day, in others every fifth day, whilst

the records for others range from two eggs in 18 days to three eggs in 22 days. Usually the Mallee-Hen lays its eggs regularly every third or fourth day during the first half of the breeding season, but then the periods between the depositing of each subsequent egg varies according to the constitution of the bird and the food supply in the vicinity of a particular mound, as well as to other conditions. For instance, hot and dry seasons have a noticeable effect on the birds, and at these times they lay few eggs. Some of the mounds were examined when the weather had been exceptionally hot and dry, and they contained from two to five eggs, but a great many mounds were found to be deserted. During the laying season of 1907, at Pine Plains, Victoria, 45 different mounds were placed under observation at which the birds had been working in the usual manner during May and June, gathering up the dead leaves, &c., and placing them in the egg-chamber, which the birds had already opened out in the old mounds a week or so beforehand. Fifteen of the Mallee-Hens completed their mounds and started to lay early in September, which is the usual month for the birds to start laying in that district. These birds laid, as usual, an egg every three or four days, and continued to lay regularly up to the end of September, after which time only one fresh egg was added to the number, when an interval of two to four weeks had elapsed. This irregularity continued to the middle of December. The largest clutch obtained from one mound up to the 12th December was eight eggs. Then, again, over 20 of the owners of the balance of the mounds discovered in September, when the birds had got all the material scraped up and had formed their mound in the usual manner ready to receive the eggs, did not lay in that month, and had not done so when examined in December. On visiting these mounds regularly at intervals of about one week or ten days, it was seen that the birds had only just gathered up the dead leaves and other *debris* and had placed the material at the side of the mound, and had done nothing further to complete the nest. The general dryness, bordering on drought, at this particular time influenced the birds, and so caused this phenomena. It is interesting to note that the Mallee-Hen has the power to cease laying. This condition is no doubt due to attrition brought about by the scarcity of food, as well as by the change in the general environment, which reacts on the internal mechanism of these birds. In the nesting season the bird is never very far from the mound in which its eggs are incubating, and if the eggs be taken from it they soon repair the damage and place everything in order once again and continue laying. At Nhill, in Victoria, a friend of mine opened the top of a mound, and then retired to his work a little distance away. Returning to the mound some time after he found that it had been repaired. He uncovered

the mound several times in one day, and on each occasion the mound was renovated. This proves that the birds constantly watch the mound, and although my friend was unable to see the birds, yet they must have been close at hand. Should an egg be placed upside down—that is, on the larger end (although there is very little difference in the size of the apices of the egg)—and left in the mound in this position, the Mallee-Hen will set it up on its proper end again. After laying the egg the bird places it with the smaller end downwards, so that the head of the chick, which is formed in the larger end of the egg, is uppermost. It is marvellous how the bird does not break her thin-shelled egg when adjusting it in its proper position in the mound with her feet, and also when opening up the mound each time to lay a further egg, or when working at the mound during the time when incubation is proceeding. That these birds should place their eggs on the smaller and more difficult end on which to balance them shows a wonderful inventiveness and forethought, since it is from the position in which the egg reclines in the egg-chamber that the young are born in a posture ready to work their way out of the mound—*i.e.*, with their feet and head uppermost. The number of eggs that a Mallee-Fowl lays in a season ranges from 1 to 20, varying, as before stated, according to the environment and climatic conditions. The large number of eggs deposited in normal seasons indicates that the Mallee-Fowl has many enemies to contend with, because the number of eggs deposited by a bird is usually in proportion to the degree of danger experienced by its offspring. The egg is of an unpolished delicate salmon-pink colour, varying to a warm pinkish-red, when freshly taken from the mound, but it readily fades to an earthy brown. Occasionally eggs have been found that were white; but these usually have an epidermis or coating, which is readily scraped off, showing a buff-white shell beneath. As the hatching proceeds this epidermis chips off in patches as well as fades. That the egg should be coloured is indeed a cause for reflection. Of what protective value is the colouration, unless, perhaps, it be when the bird, after depositing its egg, is disturbed and forced to flee, leaving it exposed, when its somewhat similar colour to the mound would render it much less discernible than were it plain white?

Although no absolute plan of ovi-disposition in the mound can be stated, yet it is certain that the eggs are laid in tiers, the usual number in the bottom tier being four. However, I have found five eggs, as will be seen in the illustration. This photograph was taken by me without displacing the eggs in any way. The odd or fifth egg was tilted, and as this mound had been opened once before to make observations, the finding of the fifth egg in the lower tier was probably the result of abnormal conditions due to





(1.) Egg-Mound of Mallee-Fowl (*Lipoa ocellata*)  
(As left by birds in hot weather).

(2.) Bottom Layer of Eggs in Mound.  
(Exposed for photograph.)



interference. Sometimes, however, only three eggs constitute the lower tier, which is the first of the series deposited in the egg-chamber. There is no regular spacing between the eggs forming any one tier, but the eggs comprising it are usually on the same plane, being uniformly level; yet this formation is not constant. The eggs are separated from one another by 6 to 12 inches of sand, and are placed close to the solid, interlaced decaying vegetable matter forming the wall of the egg-chamber. This position serves two purposes—firstly, it brings the eggs near to the warmth radiated by the decomposing vegetable mass, and, secondly, it also prevents undue lateral pressure that would otherwise fall on the weakest part—*i.e.*, the side of the egg, as it reposes vertically in the mound, and thus prevents the egg from being crushed by the superimposed mass of sand or gravel, which is usually heaped about 2 feet high above them, as well as being banked several feet thick through the walls that compress the material of the egg-chamber on all its sides. It was probably due to these causes that the egg-chamber itself was evolved. This hypothesis is all the more feasible on account of the circular design of the architecture of the inner walls of the chamber. Were the birds to build a square egg-chamber, that mode of structure would more readily collapse should the mound become displaced by a cyclone or by other means. Being composed externally of loose sand or gravel, which material is apt to shift bodily, owing to its instability, too great a pressure would be exerted on the external parts of the egg-chamber, which, if square, would more easily collapse, and render the eggs liable to destruction. The circular method, also, of the structure of the shaft or funnel which forms the receptacle for the eggs, is much less liable to damage, since the pressure is exerted evenly over its surface, whilst it would spin around with the mound should it be moved by any cause, such as by whirlwinds, which are of common occurrence in the hot, sandy districts of Australia. Above the first or bottom tier three or four more tiers or circles of eggs, one tier above the other, are deposited, with no one egg immediately over another. Sometimes the eggs in the tiers will number—

| Tier.        | No. 1 Mound. | No. 2 Mound. | No. 3 Mound. | No. 4 Mound. |
|--------------|--------------|--------------|--------------|--------------|
| 1st (bottom) | 4 eggs       | 4 eggs       | 3 eggs       | 5 eggs       |
| 2nd ...      | 5 "          | 6 "          | 5 "          | 6 "          |
| 3rd ...      | 3 "          | 4 "          | 4 "          | 4 "          |
| 4th ...      | ...          | ...          | 3 "          | 2 "          |

Usually 3 or 4 inches of sand divide the eggs in one tier from those in another, but this is not constant. The temperature of the egg-chamber varies from 90 degrees to 97 degrees, which heat is sufficient to hatch out the eggs successfully. The bird, however, as before stated, *regulates* the temperature according to

the external atmospheric conditions, thereby earning the cognomen of "Thermometer-Bird." The usual clutch of eggs laid totals sixteen. The egg is of large proportions when compared to the size of the bird which lays it, and is excellent eating, either in a cooked or raw condition. Many a thirsty wayfarer whose water-bag has become dry, and who has been lost in these waterless areas, owes his preservation to the reviving influences of the sucking of Mallee-Fowls' eggs.

YOUNG.—In a sense the young are born fully fledged, although the plumage varies materially from that of the adults. It takes usually from 42 to 45 days for the chick to hatch out. Experiments were made by Mr. M'Lennan to ascertain the condition of the chick at birth, and upon breaking an egg after 41 days of incubation in the mound, he found a somewhat helpless little creature. This small moundling after a short space of time became clothed, as it were, as the gelatinous-like material that causes the feather-sheaths to adhere to the skin of the chick became dry and allowed the still-sheathed feathers to separate. In this condition the chick possessed a filo-plumaceous or hairy appearance. By throwing some dry sand upon the fledgling and placing it in the sunshine the sheaths soon burst, leaving the feathers to expand, and in less than one hour it was fully fledged and could fly from 10 to 15 yards as well as run at a fair speed. It soon learned to hide, which it did by lying flat upon the ground with its neck outstretched. Its mottled rufous-brown and buff plumage harmonizing with its surroundings rendered the young Mallee-Fowl inconspicuous. Born with its head up, and with its toes in front of its beak, the young chick works its way out of the mound by scratching, and as it reclines partially on its back, the sand, which is naturally loose, works down under it and at the same time raises the bird and brings it nearer the surface of the mound. No sound is made by the chick, such as cheeping, when in its sandy bed. The head of the chick always appears first through the mound, and when it finally frees itself the first thing it does is to give a good shake, then a wide gasp. Looking around as if to comprehend the reason of its sudden transition, and being stimulated by the awesome appearance of its surroundings, it suddenly rushes off and disappears in the scrub. If caught and buried again it cannot work its way out once more, because it is soon smothered. Although the young when leaving the mound are fully fledged and capable of taking short fluttering flights within half an hour of their emersion, if stimulated by fear, yet they prefer to get out of harm's way by trusting to their legs, that have so ably assisted them in working their way out of the mound. Having once left the mound they never return to it again. The chick soon learns to nourish itself after leaving the mound, and remains in its vicinity, where it is afterwards

joined by the other chicks of the same mound when they have effected an escape from it. The old birds have never been observed to assist the young ones in the search for food, and have never been found accompanying them, hence the young lead an independent existence from their birth. Until they are about half-grown the young ones camp at night in the centre of a thick bush, a place where they also take shelter during the daytime. When about half-grown they begin to perch in the trees at night, and are then safe from ground enemies, which up to this time take a heavy toll of the immature birds. It is exceedingly difficult to capture the chicks, and the plan adopted to obtain them is to enclose the mound with fine mesh wire-netting in the months of November, December, or January, leaving a space of about 2 feet clear on all sides of the mound. Then put a quantity of small boughs inside the netting, so that when the young ones come out they can get cover close at hand to protect them from Hawks. The chicks are fond of bird-seed, and this is placed inside the netting. When this cage is ready, obtain a few stout sticks and lean them against the top of the wire on the outside, for the old ones will walk up them and jump in, and so attend to the mound and keep it loose. When it is thus ringed with netting, the old ones will not fly into it, but they will fly out readily enough from the crown of the mound. If the old birds are shut out from the mound the chicks become smothered in the shell, as the mound becomes hard and impervious to the oxygen of the air. Once the chicks are hatched in this way the old birds pay no further attention to them.

The general colour of the dorsal surface of the downy plumage of the young bird shortly after leaving the mound is a mottled rufous-brown, whilst the ventral surface is an ashy cream-buff. The legs and feet are well developed and strong, and the toes are provided with long and powerful claws, capable of scratching vigorously for food. The tarsus measures 1 inch in length; middle toe, 1.06 inches; nail, .27 of an inch; hallux, .61 of an inch; the bill, .47 of an inch long. The primaries and secondaries, which are the flight feathers of the wing, are fully developed, and are of a brown colour, barred with white. The wing measures 3.93 inches in length. The wing coverts, which are of a downy nature, are brown, mottled with white. The downy feathers situated on the flanks and abdominal surfaces and throat are a creamy-buff. The lores, auriculars, and forehead feathers, which are also downy, are a brownish cream-buff. Crown, nape, back, and rump feathers are a light mottled brown, washed with buff. The tail, which is downy, is a light brown, barred with white on the dorsal surface, and is an inch long, whilst the ventral surface is somewhat lighter in colour. The breast, which has a mottled appearance and is downy, is an ashy-buff, whilst the sides are somewhat similar in colour, only

possessing a barred appearance. Total length of chick is 7.8 inches.

ADULT BIRDS.—The Lipoa is a shy and cautious bird, and is not readily found by those unacquainted with its habits. When it sees or hears anyone approaching it stands quite still, and with body in an erect position and with outstretched neck it simulates its surroundings, with which its mottled, pale-coloured plumage harmonizes. The bird recognizes the protective value of the colour of its plumage, and therefore remains perfectly quiet to escape detection. It is believed that they mate for life, since a pair of birds is always in company except when feeding—never actually together, however, but rarely more than 50 or 80 yards apart. They enjoy a mid-day siesta together, and if startled give an alarm note like "Koonk" as they take wing, but they prefer to trust to their legs to escape. They are very fleet, and are not so readily perceived as they rush through the scrub as when on the wing. They love solitude, each pair having its own feeding-ground, but when food is scarce and when not burdened with nesting cares they wander some distance away in search of wattle (*Acacia*) seeds. They retire to other tracts of country if hunted or disturbed by settlers. These birds, are, unfortunately, doomed to extinction, more especially since the Mallee has recently been found to be excellent wheat-producing country, and is now being rapidly opened up by settlers. Moreover, the Lowan is easily hunted with the aid of dogs, and if attacked by one will instantly fly up to the top of the scrub, and become so absorbed in watching the dog that a person can steal up and slip a noose attached to a long stick over the bird's head. It is no doubt due to their natural dread of the dingo, or wild dog of Australia, which continually attacks them, and from which they escape by taking to the tops of the mallee scrub, that they adopt the same method of escape when harried by settlers' dogs. The male and female birds differ very little in their markings. In the dry, clear atmosphere of the Mallee, which on a calm moonlight night has a deathlike stillness, the loud call which the male bird occasionally emits can be heard two miles away. The note, which is shrill and harsh, when heard in these solitudes is weird in the extreme. The male is especially wary, and if they detect anyone watching them they will not go near their nesting mound. They have wonderfully fine eyesight, and quickly observe any strange object. In the extreme heat of the summer they feed chiefly early in the morning, and again late in the afternoon, but in cool, cloudy weather they wander in search of their food all day. They love to bask in the morning sun, like domestic fowls, and scoop out a hole in the loose earth, in which they lie sunning first one side and then the other, and occasionally dusting themselves. On excessively hot days the birds seek a cool place

under the grateful shade of some bush, where the ground is cooler, and there they scratch a hole and lie in it until the worst of the heat is over. They can go without water for a considerable time, but when it is conveniently near they drink frequently and freely. The most noticeable difference in the plumage of the sexes is the whiter marking on the throat of the male, where it is more brown in the female. General dorsal appearance leaden-grey, washed with rufous-brown and barred with white. Forehead, crown, and nape are provided with a sub-crest, varying in its colour from a leaden-grey to a sooty-black. In the female the crest is not so pronounced as in the male and is darker in colour, whilst the head of the female is not so coarse as that of the male, being slighter in build. The eye of both sexes has a black pupil and a light hazel iris. The feathers of the neck and hind-neck are leaden-grey, tipped with a lighter grey, giving a flecked appearance. A line of black bristles, forming the ear coverts, starts beneath the eyes and extends over the auricular region. Chin and throat rufous, lower throat feathers rufous edged with black. Fore-neck and chest black, each feather striated with a median line of greyish-white along the vane, especially on the fore-neck, whilst the feathers of the chest, being black from the vane inwards and whitish-grey from the vane outwards, give an appearance of a distinctive black patch or stripe on the chest. General appearance of ventral surface greyish-white, stained rufous. Side of hind-neck and chest leaden-grey. Sides and flanks barred with black. Under tail coverts rufous-white. Tail long, rounded, and drooping, and containing sixteen feathers, which are greyish-black, tipped broadly with greyish-white, which is usually stained lightly with rufous and often flecked with greyish-black. Humeral feathers leaden-grey. Lesser wing coverts light leaden-grey broadly tipped with greyish-white, on which also is a broad blotch of black, further blotched and margined with rufous. Median wing coverts are the same as the lesser, only the black blotch has more distinctive rufous markings, whilst the white markings extending down the vane have a V-shaped appearance. Primaries rufous-grey, the outer web having darker markings. General appearance under shoulder is a dark rufous. On the lower portion of the hind-neck contiguous to the back is an indistinct bright rufous collar. Feathers of the upper back have a leaden-grey appearance, barred with white and black and margined with rufous. Back is a rufous-grey, margined with lighter grey. Upper tail coverts rufous-grey, irregularly banded with black. The four central tail feathers same colour as upper tail coverts. Some of the specimens examined have a larger rufous bar across the feathers of the dorsal surface, and less black, and therefore have a more pronounced rufous appearance.

## The Flame-breasted Robin (*Petroeca phoenicea*): a Monograph.

BY A. G. CAMPBELL, POMONAL, VICTORIA.

(Read at the Annual Meeting of the A.O.U., Melbourne, 20th Nov., 1908.)

THE time appears to be ripe for some conclusive statements concerning this well-known species. It so happens that the comings and goings of this little bird, which is, perhaps, with the Magpie, the commonest bird known to the public mind in this quarter of Australia, are shrouded in mystery—not to say myth, for legends attach themselves to many a common form of life. It is not difficult to understand how the “Red-breast,” ever noticed as a mark of colour in the dull winter landscape, and in itself a glorified reminder of “the dear Home bird,” the English Robin, should elicit questionings concerning its disappearance in summer. Where is it then? Visitors from Tasmania had the answer ready—“It nests with us;” and the chain of evidence was seemingly complete. The bright little bird that makes its abode in the parks and gardens of the city as well as in the country fields and lanes, disappearing on the approach of summer, nests in Tasmania. Therefore the delicate little creature migrates to Tasmania, flying across 100 miles of Strait to reach its summer home. There are some seeming absurdities in bird-life that do not prove so on critical examination, but here is one that should not stand much criticism. That a feeble land-bird, not seen in the field to keep up a sustained flight for more than 100 yards, should cross Bass Strait, one of the stormiest channels about Australia, and at a time of the year when equinoctial gales rage high, is, to say the least of it, improbable.

The illustrious John Gould set forth in his “Handbook to the Birds of Australia” (page 282) a concise account of the habits of the Flame-breasted Robin:—“Tasmania and the south-east portion of the Australian continent constitute the natural habitat of the species. In the former country it is very common, but in New South Wales and South Australia it is not so numerous, and is very local. It is far less arboreal than *Petroeca multicolor* (*leggii*), giving a decided preference to open wastes and cleared lands rather than to the woods; in many of its actions it much resembles the Wheatear and other true Saxicoline birds, often selecting a large stone, clod of earth, or other substance on which to perch and show off its flame-coloured breast to the greatest advantage. . . . It is a very familiar species, seeking rather than shunning the presence of man, and readily taking up its abode in his gardens, orchards, and other cultivated grounds.”

Gould was writing in Tasmania of a Tasmanian bird, and his remarks—“retire to the forest for breeding”—are true as far as



they go ; but he does not commit himself to any statement that the birds retire to nest in the forests of Tasmania from the adjacent States. Nor does Robert Hall in "Insectivorous Birds of Victoria" (page 38). It must be remarked, however, that, especially with the latter author, nothing very definite is indicated of the species' summer habitat by the words "retire to the forests to nest."

In south-eastern Australia the Flame-breasted Robin is regularly expected to appear in open country about the end of March or the beginning of April. The earliest and latest dates I have in my note-books are 20th March, 1889, and 10th September, 1900, both at Rutherglen, in north-east Victoria, while those for the vicinity of Melbourne are 31st March, 1896, and 8th September, 1896. The species is first in large flocks—a great many brown birds, with several bright-breasted males among them. The flock after a few days passes on or scatters itself about the adjacent district. I have remarked that the Robins often are first seen immediately after boisterous weather. This may be no coincidence, for the rough south-westerlies which mark the equinoxes may be a signal to the little birds of the change of season, that necessitates their seeking more congenial winter quarters.

Very numerous are the references to the arrival of the Robins. Two typical ones are found in the *Victorian Naturalist*, vol. vi., p. 72, and *The Emu*, vol. iii., p. 69, where it is stated that the first Flame-breasted Robins were seen at such and such a place on such a date. Particularly in the vicinity of Melbourne are Robins in large numbers, frequenting the open country. Throughout the moor and heath land of Cheltenham, on the east side of Port Phillip, and on the grassy Werribee Plains on the western side, the numbers of birds appearing in the late autumn months would certainly do much to foster the idea that the species came from Tasmania, which lies across the Strait. I have a note, 8th June, 1897, Cheltenham, showing that a flock of about 200 birds arrived on the littoral from over the bay on a very strong south-west wind. Incidentally this illustrates that the Robins during winter may move in force from one lowland district to another. I do not suppose that this flock had come further than the plains on the opposite shore of Port Phillip, a distance of about 20 miles.

The Western District is a favoured winter resort, so is north-eastern Victoria ; but the greater part of the Goulburn Valley, with somewhat similar country, and the Wimmera, can only record very occasional birds. In the Mallee and Riverina the species is not known. Robins also are found in winter in the vicinity of the Blue Mountains, New South Wales, and about Adelaide, South Australia. Upon a sketch map a line showing the inland boundary of the area over which Flame-breasted

Robins are to be found would follow in the main the contour of the coast from Adelaide round to Sydney, not exceeding at its greatest distance from the coast 150 miles. This line is also the contour line of the mountainous country, which accounts for the marked turn inland in north-eastern Victoria. *Petroica phænicea*, it may be said, is not found on any open country more than about 60 miles out from highlands ranging above 1,500 feet elevation.

Commonly there is no reference to Robins in the low country of the mainland from October till the end of March. Obviously the birds are away nesting. But where? The Flame-breasted Robin, there is no doubt, is a very common bird in Tasmania. During the Australasian Ornithologists' Union Congress of November, 1903, the species was seen tending fully-fledged young in the vicinity of Hobart\* ; and again, during the sixth Congress (November, 1906), a nest was seen in a crevice of an overhanging crag of Launceston Gorge.†

The islands of Bass Strait, in no part rising more than 950 feet above sea-level, are also the breeding-grounds of this Robin. The Field Naturalists' Club expedition to King Island, in November, 1887, procured eggs and skins.‡ The species was not dislodged from the locality by the quick spread of settlement, for 15 years later I observed it nesting in dead trees and stumps adjacent to clearings.§ On the Kent Group, lying at the western side of Bass Strait, Flame-breasted Robins were reported by the Naturalists' expedition of November, 1896 || :—“The balance of species, including sea-birds, are common both to Victoria and Tasmania. One only need be mentioned—the pretty Flame-breasted Robin, so common about our gardens in winter time, which was here found plentiful. Right merrily did they cheer our camp, especially at early morn, with antiphonal singing, rapidly answering each other from tree-top or rocky eminence or grassy bank. We were evidently at suitable breeding-grounds, several nests being observed with eggs or young. It is a somewhat remarkable circumstance that these Robins' nests are rarely, if ever, taken on the mainland, but in Tasmania and the intermediate islands.” The quota of bird-life, however, on both King Island and the Kent Group, and, in fact, all the islands lying between Victoria and Tasmania when large enough for land-birds, partakes of the Tasmanian character, and not the Victorian (see *The Emu*, vol. ii., p. 204). This is an illustration of the fact that these islands were once physically united to Tasmania, and are not half-way places or stepping-stones to the mainland, for the birds are in some instances—notably *Malurus elizabethæ*—differentiated from the Tasmanian

\* *The Emu*, vol. iii., p. 161.

† *The Emu*, vol. vi., p. 94.

‡ *Victorian Naturalist*, vol. iv., p. 137.

§ *The Emu*, vol. ii., p. 207.

|| *Victorian Naturalist*, vol. vii., p. 132.

form as much as the Tasmanian race is different from the Victorian stock, of which it was at some still more remote period a part.

In 1896 the information was first made known that *Petræca phænicea* nested in Victoria. A nest and eggs were procured in the Omeo district, above 3,000 feet level,\* and the male bird shot for identification. The next season, in November, nearer Melbourne, I observed a pair of birds feeding young in nest in the Dandenong Ranges—height, 1,500 feet above sea-level. There were other birds about, and many a time since then in the same and similar localities about these ranges have I met with the Flame-breasted Robin in summer. As far back as January, 1889, the species was recorded† in the valleys of the Brodribb and Bemm Rivers, East Gippsland—elevation, 1,000 to 4,200 feet. Then in November, 1890, the species was observed above Marysville, Victoria, associated with the Pink-breasted Robin (*P. rhodinogastra*).‡ At the head of the River Yarra, in somewhat similar country, both these Robins were seen by myself in December, 1904 (see *The Emu*, vol. iv., p. 165).

On 26th January, 1900, the Field Naturalists' Club excursion to Plenty Ranges, part of the Dividing Range, north of Melbourne, the crest of which is 1,700 feet above sea-level, left the following record in the *Victorian Naturalist*, vol. xvi., p. 168 :—“The appearance of several Flame-breasted Robins (*Petræca phænicea*) quite upset the theory that these birds always leave the mainland in spring to breed on the islands of Bass Strait and Tasmania, returning again on the approach of winter. Mr. Hall not only secured an adult male, but also a young male just changing to the bright colours of the adult. Many others were seen, so the specimens secured were not isolated birds.” Robins were observed by me some years later during a walking tour through the Kinglake plateau at Christmas time. This plateau is part of the Dividing Range, to the east of the Plenty Ranges, continuing round towards Healesville.

In the *Victorian Naturalist*, vol. xxii., p. 169, is a record of *Petræca phænicea* being seen by the roadside from Fernshaw to Buxton, which road is nowhere below 1,000 feet elevation :—“With the thawing of the snow, birds become more plentiful. Robins were very abundant. Four species were noted—viz., *Petræca rosea*, *P. leggii*, *P. phænicea*, and *Eopsaltria australis*.” This was during the end of September (1905).

Mr. D. Le Souëf records several Flame-breasted Robins seen on Buffalo Mountains, in north-eastern Victoria, early in March.§ Mr. C. French, jun., informs me he has seen the species very plentifully among the rocks in the high altitudes (3,000 to 5,000 feet) of the Alps adjacent, at Christmas time. Three or four

\* “Nests and Eggs,” Campbell, p. 138. † *Victorian Naturalist*, vol. vii., p. 177.

† *Victorian Naturalist*, vol. vi., p. 33. § *The Emu*, vol. vii., p. 41.

nests were discovered in roots hanging from the road-cuttings on the mountain-side.

The Australian Museum Catalogue, page 166, gives a record of three eggs being taken in South Gippsland after the finder had seen the birds building, November, 1891; also of eggs taken at Glanmire, Bathurst, New South Wales, 1896. But these two records are unfortunately much discounted by two other records for *P. phanicea*\* on the same page—namely, at Portland, Vic., and in the Mallee—two very questionable lowland areas. However, Mr. J. A. Hill tells me that at Jaunter, in the Blue Mountains, he has seen old birds feeding young during the month of February.

So far these records indicate the presence of *Petræca phanicea* in high altitudes in Victoria and adjacent parts of New South Wales during summer. Yet another tract where the species is in numbers during the nesting season is the Cape Otway Forest, an area of thickly-wooded, precipitous country in southern Victoria over 500 square miles in extent, and with a big rainfall. The late Mr. H. E. Hill states† that both *Petræca phanicea* and *P. leggii* occur in the forest. During Christmas, 1902, Mr. C. F. Belcher "saw at least eight pairs of this species during a walk from Forrest to the coast (25 miles), and not one of the Scarlet-breasted birds (*P. leggii*). At Apollo Bay there were a few of the latter, but the Flame-breasts were still in an easy majority. There is not the slightest doubt in my mind that they breed throughout this forest. I saw old birds feeding what seemed to be this season's young on several occasions."‡ And again in the *Geelong Naturalist*, September, 1904, page 50, he says:—"It has generally been assumed that this beautiful Robin leaves the mainland in spring and goes to breed in Tasmania and the islands of Bass Strait. But in the Otway Forest in summer this species is one of the commonest, so that it will not be surprising if it is ascertained that the Flame-breast does not migrate from Australia at all, but merely moves off at the approach of spring to the thick forest country in the extreme south." In "Nature Notes," *The Argus*, 1st August, 1907, Mr. Donald Macdonald writes concerning a nest of the Flame-breasted Robin built on a ledge of cliff on the Erskine River, Cape Otway:—"This nest, contrary to the general rule in that district, was not decorated with lichen on the outside, but was of uniform grey, like the rock, instead of resembling the lichen-spotted musk trees." South Gippsland ranges, being of similar geological and physical nature to Cape Otway, would offer similar attractions to the Robins in summer.

In view of this evidence of the presence of *Petræca phanicea*

\* The nest and eggs of *Petræca leggii* can scarcely be told apart from those of this species.

† *The Emu*, vol. ii., p. 163.

‡ *The Emu*, vol. iii., p. 62.

plentifully in Cape Otway and on the Buffalo Mountains in summer, it is somewhat surprising to find no reference whatever to the species in the reports of the Field Naturalists' Club excursions to these two places during Christmas of 1904 and of 1903 respectively,\* though *P. leggi* is stated to be numerous. The same club visited the Grampians in November, 1891, and in the list published† of birds observed is *Petrarca phoenicea*. No reference, however, is made to it in the body of the report, which is very remarkable, seeing that this record, if correct, is one of the first notifications of the species being upon the mainland during summer. From three seasons' personal acquaintance with the Grampians, I very much doubt the record, and consider it "not proven."

Regarding the presence of Flame-breasted Robins in Tasmania during winter, when they should (in theory) be on the mainland, the evidence is conclusive. In answer to an inquiry of mine, Mr. A. R. Reed, of Hobart, in July, 1904, shot and forwarded to me a full-plumaged male bird, with the information that the species was just as plentiful in the vicinity of Hobart then as in summer. Subsequently, in *The Emu*,‡ Col. Legge states he has seen these Robins in Tasmania in the months of May, June, and August. Miss Fletcher writes§:—"Robins left our district near the end of April, and it was not till 31st July that I noticed them again." Mr. H. Thompson's note in *The Emu*, vol. v., p. 32, also answers the question:—"Several Flame-breasted Robins were observed feeding at a manure heap in the Corporation Yard, Launceston, on 21st April, and as late as 15th June, 1904. These birds were very tame."

The evidence, in print, in favour of the migration of *Petrarca phoenicea* between Tasmania and the mainland is very scanty. It does not take long to review it. Mr. J. Burton, on the schooner *Gratitude*, when five or six miles off the land, between Wilson Promontory and Cape Schanck, 21st April, 1896, noticed several (about six) Flame-breasted Robins flying, some of which alighted on the rigging of the vessel.¶ These birds, if they had not been driven to sea from South Gippsland by heavy weather, may have been making their way from Wilson Promontory or some other headland across the bight towards the open country in the vicinity of Port Phillip. They were only a few miles off shore. The only other reference I can find is in the "Nature Notes" column of *The Argus*, 26th January, 1906:—"I have seen them repeatedly when travelling over to Tasmania in the months of September and the beginning of October. They were going to or migrating to Tasmania, and they return in the autumn. I have seen dozens of them in one trip going over, and when no

\* *Victorian Naturalist*, vol. xxi., p. 157; vol. xx., p. 148.

† *Victorian Naturalist*, vol. viii., p. 193. § *The Emu*, vol. iii., p. 108.

‡ Vol. vii., p. 145.

¶ Campbell, "Nests and Eggs," p. 137.

land was in sight." "C. H.," the author of these statements, is very emphatic, but he stands alone as an eye-witness of this remarkable migration.

Again, an interesting report comes from Cape Wickham (King Island) Lighthouse (see *The Emu*, vol. iv., p. 65), in which a number of birds are enumerated as gathering round the light at night, in fine, overcast weather. The Flame-breasted Robin is mentioned. No dates, however, are given for its appearance at the light, but the supposition that the species was migrating oversea is a very remote one, seeing that at least two other species of land-birds are named in conjunction therewith which are distinctly local and are never accused of migrating. These are the Dusky Robin and Olivaceous Thickhead.

The conclusions I feel justified in drawing from the foregoing facts are these:—

- a. That the Flame-breasted Robin does not regularly migrate from the mainland to Tasmania or the islands of Bass Strait in spring and back again in autumn.
- b. That the species remains the whole year round in Tasmania.
- c. That the Robins frequenting the low country of south-eastern Australia in winter retire to the adjacent highlands to nest.

Regarding conclusion *a* little more need be said. It is well known that some small birds—instance, Sandpipers and Stints—not much larger than Robins in point of size, undertake marvellous journeys from one hemisphere to another, but unquestionably they are adapted by nature for extended flight, provisioned as they are with large pectoral muscles and long primaries or flight feathers. Other birds, again, as is the case with certain Flycatchers, take long journeys, but do not cross the sea. They pass by easy stages from one belt of forest to another, and so can rest and forage by the way. A tender and timid bird like *Rhipidura rufifrons* can thus cover 3,000 miles or more, journeying from Queensland to Victoria and back again, annually. A parallel still more appropriate is *Petroca rosea*, which comes from the same sub-tropical coastal scrubs as *Rhipidura rufifrons*, where it has passed the winter, and, after nesting in Victoria, returns again with its young. But *Petroca rosea*, though similar in many respects to *P. phoenicea*, is not credited with crossing Bass Strait, for it has never been recorded in Tasmania. *Petroca leggii*, a very close connection of *P. phoenicea*, wanders about also, seeking congenial winter quarters and food supply, but to no great distance from its starting point, when spring comes round returning to the forests to nest.

Conclusion *b* is the natural corollary of *a*, but is a necessary

statement, since it illustrates habits which would reasonably hold good with the same species quartered in another and separate region. In Tasmania the Flame-breasted Robins congregate during the winter months, and are as partial to cultivated fields and the haunts of man as they are on the mainland. They come about the streets and yards, sitting upon the wires and fences, and are very tame.\* But in September they disappear in pairs to nest in secluded parts of the mountain slopes and highlands. They ascend to the highest altitudes, having been recorded on the plateaux surrounding Ben Lomond (see *The Emu*, vol. vii., p. 146) from springtime until March.

Conclusion *c* contains the solution of the whole question. If Flame-breasted Robins, so plentiful in many parts of Victoria, for instance, in winter, all retire to adjacent highlands to nest, then there is no longer any need to entertain the idea of migration. The mysterious disappearance of countless numbers of Robins is explained, and their whereabouts in summer made known. If all the Robins, or even the majority from the mainland, congregated upon Tasmania to nest, then that small area must surely be over-stocked with Robins. But that is not so. The species is no more plentiful in the island State in summer than in winter. The appearance of the bird in travel-stained flocks would be a matter of common observation on both sides of Bass Strait. On the contrary, the Robins, when they first appear about Melbourne in autumn, are (that is, female and young male birds) of a rich, warm brown colour, as if they had for some time previously been accustomed to deep forest recesses. This warm colour in about a fortnight's time fades to a greyish-brown, more in keeping with the sombre winter landscape of the open country they frequent. Some even have a touch of red-brown on the under surface, but this, too, quickly fades on contact with light. Even richly coloured birds, shot for museum purposes, will, though dead, become lighter. The pigment of the autumn plumage in which they left the half-lighted forests fades on contact with stronger light. The regions from which the Robins arrive are the Plenty, the Upper Yarra, Baw Baw, and the Dandenong Ranges, which lie to the north and north-east of Port Phillip; from the Otway and South Gippsland; from the Buffalo (including the Alps) and North and East Gippsland Ranges; also in New South Wales, the highlands from the Victorian border to the Blue Mountains and New England, or even south Queensland, following the geographical line of the Great Divide. Further, as Robins are to be found in numbers wintering in the vicinity of Adelaide, South Australia, I would here suggest, by analogy, that in the forest retreats of adjacent highlands like Mt. Lofty the species will be found in summer nesting.

\* *The Emu*, vol. v., p. 87.

Indications that Robins do not travel far are found, paradoxically, in the late dates of arrival at the outposts. Mr. J. A. Hill, of Murtoa, tells me he always looks for a few individuals to arrive in his district on 1st May. - This is as far inland as the species is found. Furthermore, there are places where a few birds arrive in winter, but do not remain long (see *The Emu*, vol. vi., p. 178), passing on to more suitable winter quarters.

Undoubtedly the largest numbers of Robins appear in the winter in the Western District of Victoria, which fringes the Otway Forest; in the open country south-west and south-east of Melbourne, which is adjacent to the highlands of the Plenty and Upper Yarra watersheds, as well as the Dandenong Ranges, and not far distant from both Cape Otway and South Gippsland; and in north-eastern Victoria, a large tract of flat and comparatively open country lying contiguous to the Buffalo Ranges and the Alps, the loftiest in the Robin region. It is significant, too, that the earliest date of the autumn appearance of the Flame-breasted Robin, recorded in my note-books, 20th March, 1899, was in the locality of Rutherglen, about 40 miles due north of Buffalo. If these Robins had come from Tasmania it would have taken many days to travel over 150 miles inland, and the records as a rule would be later than those obtained near the sea-board. But my notes show that in the north-east the birds appear earlier, if anything, than about Melbourne, and at the approach of spring they showed no anxiety to hasten away. The origin of the annual movement of the Flame-breasted Robins probably lies in the fact of their being ground-feeding birds, and when the first snow falls in their summer retreat they are forced to move to lower altitudes.

### Among the Birds of North-Western Victoria.

By F. E. HOWE, ALBERT PARK, MELBOURNE.

(Read before the Bird Observers' Club, 21st October, 1908.)

LEAVING Melbourne by the 7.45 a.m. Adelaide train on Monday, 14th September, I arrived at Stawell, where Mr. J. A. Ross was to join me on the following evening.

Next morning we were up betimes and made a bee-line for the Ironbark Ranges. The bush was made beautiful by the bright yellow blossoms of the wattle and the delicate white flower of the *Brachyloma* (a heath-like plant), while the air was laden with their perfumes. The Honey-eaters were here in hundreds—aye, thousands—and nests were seen on every hand. Here were such forms as the Tawny-crowned (*Glycyphila fulvifrons*), Yellow-tufted (*Ptilotis auricomis*), Wattle-Bird (*Acanthochæra carunculata*), White-bearded (*Meliornis novæ-hollandiæ*), as well as the White-browed Babbler (*Pomatorhinus superciliosus*), all breeding.



Mr. A. J. Campbell, in his "Nests and Eggs," page 398, gives the position of the nest of *P. auricomis* as being placed in a sapling or small tree, but, although we found over a dozen, one only was placed in a tree (about 7 feet high), the balance being found very low down in the scrub, generally about 12 inches, and as low down as 6 inches from the ground. Many of them contained a pair of beautiful salmon-pink eggs, others young in all stages, and from not a few the young had already flown. The young of this bird are born blind and featherless; the gape is yellow, as is also the inside of the mouth, with the exception of two black spots on the lower mandible; the legs and feet are of a light flesh colour. At about three days old a dark grey down appears and the eyes are beginning to open. At about seven days old the yellow feathers of the abdomen are well defined, and the primaries in long blue quills. Young that appeared to be very little older had the primaries unfurling, and we calculated that they would leave the nest when about 15 or 16 days old. The irides of the adult are dark maroon, but in the nestling they were dark brown. I took one very beautiful pair of eggs, and whilst at the nest two birds appeared, and seemed greatly agitated at my presence. They were secured, and to my surprise both proved to be females; and it was strange that of all the Honey-eaters we got on the trip not one was a male. The Tawny-crowned Honey-eater (*Glycyphila fulvifrons*) also builds low down in the heath, and makes a very substantial and beautiful nest, laying therein two long fleshy-white eggs, with dark brown and purplish spots scattered meagrely about the larger end. A nest was found containing young about a day old; they were blind, and covered with dark-grey down; gape yellow, inside of mouth bright orange. When engaged in nest-building, we noticed they were always careful to alight about 10 yards from the nest, and, running along the ground, approach it in that fashion. The song of this bird is very pleasing, and consists of five liquid notes, generally uttered on the wing.

Wattle-Birds (*Acanthochera carunculata*) were very plentiful, and nests containing young and eggs were noticed. A nest with young about a week old was built in a fork about 6 feet high. The quills on the primaries, about an inch long and of a blue colour, were not yet broken; the eyes were just opening. They were clothed with a dark-grey down, while the inside of the mouth and the gape were both yellow. We were amused while watching a Wattle-Bird to see it give chase to a Raven, uttering harsh croaks and plucking the larger bird by the tail. Probably the Raven was after the young.

Leaving Stawell on the 15th, at 10.20 p.m., we journeyed on to Tailem Bend, in South Australia, arriving there at 6 a.m. The weather here was fine and frosty, and consequently very

cold. Breakfast not being obtainable till 8 o'clock, we shouldered our guns and walked briskly to a patch of mallee scrub distant about  $1\frac{1}{2}$  miles. Here we found the Grey Shrike-Thrush (*Collyriocincla harmonica*), White-winged Chough (*Corcorax melanorhamphus*), Yellow-plumed Honey-eater (*Ptilotis ornata*), Restless Flycatcher (*Sisura inquieta*), Black-winged Crow-Shrike (*Strepera melanoptera*), Ground-Dove (*Geopelia tranquilla*), Striped Brown Hawk (*Hieracidea berigora*), and many other forms. A nest of *Pomatorhinus superciliosus* was found to hold three young ones that were blind and featherless, with gape and inside of mouth yellow.

We left Tailem Bend at 11.30 a.m., bound for Pinnaroo, 86 miles distant and only 3 miles from the border fence of Victoria, arriving there after 6 p.m. Here we were met by "Mallee-Bird" (Mr. Charles M'Lennan). Whilst Mr. M'Lennan was harnessing up next morning we found many nests of the White-browed Babbler (*Pomatorhinus superciliosus*) just at the rear of the hotel. They were all built low down in the mallee. One nest contained four young ones about 10 days old; gape and inside of mouth yellow; quills or primaries about 2 inches long, with feathers just unfurling; eyebrow very conspicuous. We reckoned they would be fully fledged in about four days. Even after they are fledged they continue to occupy the nest. Later on, while we were examining two more nests, young birds flew out, uttering notes very like those of their parents.

On the drive out from Pinnaroo we saw great numbers of the Black-winged Crow-Shrike (*Strepera melanoptera*)—one lot of about 70—and secured a bird for identification. The feet and bill were black and the irides were bright orange. The bird measured about 18 inches in length. We found them nesting in the mallee, and three nests contained two, two, and three eggs respectively. We also found a nest of the Wattle-cheeked Honey-eater (*Ptilotis cratitia*), quite close to the track and placed in a wire-bush (*Acacia*) about 2 feet from the ground. Outwardly it was composed of bark, decorated with spiders' cocoons, in some cases an inch long, and lined with fine grasses. It contained a pair of very light-coloured eggs finely and sparingly spotted with brown and lilac. During our sojourn we noticed many pairs of this very elegant Honey-eater. We secured one (a female), and the purple of the gape gave it a very beautiful appearance. On the 19th a nest of this species was found about half built, the position chosen being about 5 feet high in a small pine in dense broom scrub (country they appear to be very partial to, affording as it does such good protection), and it was ready for eggs as we passed on our way home on 25th September.

Our camp was at Hawk Plain, Carina, Vic., and many forms were found nesting here, notably the Owlet Nightjar (*Ægotheles novaehollandiæ*), Black-breasted Plover (*Zonifer tricolor*), Black-

backed Magpie (*Gymnorhina tibicen*), Butcher-Bird (*Cracticus destructor*), Yellow-plumed Honey-eater (*Ptilotis ornata*), Spiny-cheeked Honey-eater (*Acanthocheera ruficularis*), Red-throated Thickhead (*Pachycephala gilberti*), Chestnut-rumped Ground-Wren (*Hylacola cauta*), *Drymaedus*, Black-winged Crow-Shrike (*Strepera melanoptera*), Bell-Bird (*Oreica cristata*), and Yellow-rumped Pardalote (*Pardalotus xanthopygius*), the latter just burrowing. Many others were observed, and in the Acacias on the plains the Black-backed Wren (*Malurus melanotus*), Purple-backed Wren (*M. assimilis*), and Redthroat (*Sericornis brunnea*) were very plentiful. The last-named has a very pleasant song, reminding one of that of the *Chthonicola*, but of greater volume.

On the 20th we left Hawk Plain to travel slowly to Kow Plains, about 20 miles due east and 32 miles from the border. After travelling about a mile and a half a nest of the Scrub-Robin (*Drymaedus brunneopygius*) was found, with the female sitting on a young one about four days old that had evidently been born blind and featherless. The eyes were not yet opened to their fullest extent, and were black; the gape was of a creamy-white colour, while the inside of the mouth was yellow; primaries were in long blue quills; the feathers of the head were just breaking, as were also those on the rump, which were very rufous; the feathers along the abdomen were white and well developed; feet and bill light horn. This bird was very plentiful all through this country, but owing to the density of the scrub and their very shy disposition they were more often heard than seen. It is essentially a ground bird, seldom perching in the scrub, and then only at a height of a few feet. They have a habit of elevating the tail (after the fashion of the Cuckoo) with a slow and graceful motion, generally when uttering the call, which consists of a soft whistle-like note, sweet but monotonous; when alarmed they emit a high-pitched double note, and a note they used when we were about the nest sounded like "Chair-r-r-r-r." To find the nest is very difficult. The female is slightly smaller than the male, and this appears to be the only difference.

After travelling a few hours we camped for lunch on a small plain. These plains are covered with wattle (*Acacia*) and turpentine-bush, and here we again met *Sericornis brunnea* and *Malurus melanotus*, and we were fortunate in securing a male of the latter variety just assuming the summer plumage.

A nest of the Bell-Bird (*Oreica cristata*) was found, containing three eggs and three brown-coloured, long-haired grubs. Two other nests of this species were found—one at Kow Plains, containing two eggs, and the other at Stawell with three eggs, and in each case a corresponding number of grubs with them.

The country we traversed was mostly mallee, and the route

was broken here and there by a pine ridge and then a plain, interspersed with tracts of porcupine grass (*Triodia*) and in the latter we again saw *Glycyphila fulvifrons*. On a plain we were fortunate in securing a male of the Black-eared Cuckoo (*Mesocallius palliolatus*). On dissecting this bird we found it crammed full of grubs, &c.

When we were within two miles of the homestead the character of the country altered considerably, and after driving through a fine belt of pines, the mallee (instead of the small, stunted stuff we had seen for upwards of a hundred miles) assumed the proportions of box or peppermint, and here we saw the Musk and Purple-crowned Lorikeets (*Glossopsittacus concinnus* and *G. porphyrocephalus*) in flocks of hundreds.

Next morning we split our party in two, Mr. Ross accompanying the boundary-rider, while Mr. M'Lennan and I visited a fine sheet of water called Mumble. We identified *Pardalotus ornatus*, *Cracticus destructor*, *Acanthisa uropygialis*, *Zonifer tricolor*, *Corcorax melanorhamphus*, *Astur cinereus*, *Artamus sordidus*, and *Anthus australis*, all nesting. I also found a nest of the White-browed Tree-creeper (*Climacteris superciliosa*) (?), which contained three fresh eggs, and secured the female for identification. We saw many nests building of *Acanthochoera rufigularis*, and in the distance we heard the call-note of *Pachycephala gilberti*.

Reaching the water we were agreeably surprised to see about a dozen White-headed Stilts (*Himantopus leucocephalus*) and three or four varieties of Ducks, and on the other side a bird which I think was the Dottrel (*Peltohyas australis*), but the distance was too great to identify it. A pair of White-necked Herons (*Notophoxyx pacifica*) were soaring above the water, and a dingo was seen to steal into the fringing mallee.

On reaching the homestead that night, Mr. Ross triumphantly placed two birds in my hands, one of them resembling the female of the Rufous Song-Lark (*Cinclorhamphus rufescens*). Mr. M'Lennan has observed this bird on a few occasions, and says that it is very silent, and has only been seen singly. The other was a *Calamanthus*, and if not *campestris* is a new variety. The head is rufous, with dark streaks, and the eyebrow is white; breast and under surface creamy-buff, streaked with brown; under tail coverts dark brown with white tips; it measures  $4\frac{3}{4}$  inches long, bill  $5\frac{1}{2}$  lines, wing 2 inches 1 line, tarsus 9 lines. This bird was found in the salt-bush country, and appears to be fairly plentiful. They were very hard to flush, and on account of their agility exceedingly hard to secure. Mr. Ross informs me that he first saw them running rapidly from bush to bush with tail erect; now and then they would rise to the top of a bush, uttering a warble-like song, and dart down again before he could discharge his gun.

On the 22nd we left Kow Plains *en route* to Carina, and before leaving the larger mallee noticed nests of the Whiteface (*Xerophila leucopsis*) and Brown Tree-creeper (*Climacteris scandens*), both containing young, and nests of the Striped Brown Hawk (*Hieracidea berigora*) and Mallee-Parrakeet (*Barnardius barnardi*), containing four eggs and five eggs respectively. A nest of the White-winged Chough (*Corcorax melanorhamphus*) made of the excrement of cattle was placed in a mallee.

At Pinnaroo Well (10 miles from Kow Plains) we camped for lunch and close handy found a nest of *Zonifer tricolor* containing four eggs. In every nest of this species noticed, as usual, the points of the eggs were inturned. We found two nests of *Podargus strigoides* (?), and very substantial structures they were, being composed of green twigs of the turpentine-bush, and were fully 5 or 6 inches in depth externally, but the egg cavity was only about 1½ inches. The eggs were very much smaller than usual in both cases, and measured 1 inch 8 lines in length by only 1 1/24 inches in breadth. The bird also seems to differ (we were within a few feet of it), appearing much lighter in the plumage in general, and it was unfortunate for us that we were unable to obtain a specimen.

As we crossed a plain the warbling of the Redthroat (*Sericornis brunnea*) was heard, and the bird was flushed from some fallen pines and dead bushes, and the nest, just started, was found. They prefer to build in the grasses that shoot through the dead turpentine-bush, and appear to be very local, as we found two or three old nests quite adjacent to the new one. We spent an hour watching a pair of Scrub-Robins, and found the hole scooped out preparatory to nest-making.

I forgot to mention that on the 17th Mr. M'Lennan flushed a Striped Brown Hawk from its nest. We examined it on the 18th, when it contained one egg; the second egg was deposited on or about the 23rd, or five days later (the weather in the interim was extremely cold); the eggs were quite fresh, with the female sitting and evidently laying. On the 19th it was looked at and contained only one egg.

Whilst strolling through the scrubs on the 24th a female Chestnut-backed Ground-Bird (*Cinclosoma castanonotum*) was flushed from a nest prettily situated in the heart of a mallee-bush; it contained one egg, which she subsequently deserted. The call-note of this species is a long-drawn and feeble whistle, and is exactly like that of *C. punctatum*.

On the 24th we left camp and walked into Pinnaroo, and collected skins of *Ptilotis cratitia*, *P. ornata*, *Glycyphila albifrons*, *Pardalotus xanthopygius*, and *Chalcococcyx basalis*.

It may be stated the weather was exceedingly unfavourable for work, and the strong northerly winds played havoc with the Honey-eaters' nests, many of *Ptilotis ornata* and one of

*Plectorhynchus lanceolata* being blown down. At Tailem Bend the mallee was well out in blossom, and the Yellow-plumed Honey-eaters (*Ptilotis ornata*) were busy nest-making, as many as twelve nests being observed.

Appended is a list of the birds identified during the trip :—

| Name.                                 | Locality.                           |
|---------------------------------------|-------------------------------------|
| 1. <i>Uroaëtus audax</i> ..           | .. Kow Plains, Vic.                 |
| 2. <i>Elanus axillaris</i> ..         | .. "                                |
| 3. <i>Hieracidea berigora</i>         | .. "                                |
| 4. <i>H. orientalis</i> ..            | .. Stawell, Vic.                    |
| 5. <i>Cerchmeis cenchroides</i>       | .. Carina, Vic.                     |
| 6. <i>Astur cinereus</i> ..           | .. Kow Plains, Vic.                 |
| 7. <i>Ninox boobook</i> ..            | .. Stawell, Vic.                    |
| 8. <i>Corvus coronoides</i>           | .. Carina, Vic.                     |
| 9. <i>Corone australis</i> ..         | .. Stawell, Vic.                    |
| 10. <i>Strepera (sp.)?</i> ..         | .. "                                |
| 11. <i>S. melanoptera</i> ..          | .. Carina, Vic., and Pinnaroo, S.A. |
| 12. <i>Coccyzus melanorhamphus</i>    | .. General                          |
| 13. <i>Oriolus viridis</i> ..         | .. Stawell                          |
| 14. <i>Grallina picata</i> ..         | .. "                                |
| 15. <i>Collyriocincla harmonica</i>   | .. "                                |
| 16. <i>Graucalus melanops</i>         | .. Carina                           |
| 17. <i>Lalage tricolor</i> ..         | .. "                                |
| 18. <i>Micræca fascians</i>           | .. "                                |
| 19. <i>Petræca leggii</i> ..          | .. Stawell                          |
| 20. <i>P. goodenovi</i> ..            | .. Carina and Kow Plains            |
| 21. <i>P. bicolor</i> ..              | .. Carina                           |
| 22. <i>Malurus cyaneus</i>            | .. Stawell                          |
| 23. <i>M. melanotus</i> ..            | .. Carina                           |
| 24. <i>M. assimilis</i> ..            | .. "                                |
| 25. <i>Rhipidura albiscapa</i>        | .. General                          |
| 26. <i>R. tricolor</i> ..             | .. "                                |
| 27. <i>Sisura inquieta</i> ..         | .. "                                |
| 28. <i>Chthonicola sagittata</i>      | .. Stawell                          |
| 29. <i>Acanthiza pusilla</i>          | .. "                                |
| 30. <i>A. pyrrhopygia</i> ..          | .. Tailem Bend, S.A.                |
| 31. <i>A. lineata</i> ..              | .. Stawell                          |
| 32. <i>A. uropygialis</i> ..          | .. Carina and Kow Plains            |
| 33. <i>A. chrysorrhoa</i> ..          | .. Stawell                          |
| 34. <i>A. reguloides</i> ..           | .. "                                |
| 35. <i>Sericornis brunnea</i>         | .. Carina and Kow Plains            |
| 36. <i>Cinclosoma punctatum</i>       | .. Stawell                          |
| 37. <i>C. castanonotum</i> ..         | .. Carina                           |
| 38. <i>Drymacædus brunneopygius</i>   | .. Carina and Kow Plains            |
| 39. <i>Hylacola pyrrhopygia</i>       | .. Stawell                          |
| 40. <i>H. cauta</i> ..                | .. Carina                           |
| 41. <i>Pomatorhinus temporalis</i>    | .. Stawell                          |
| 42. <i>P. superciliosus</i> ..        | .. Carina                           |
| 43. <i>Cinclorhamphus rufescens</i>   | .. Kow Plains                       |
| 44. <i>Calamanthus campestris</i> (?) | .. "                                |
| 45. <i>Ephthianura albifrons</i>      | .. "                                |
| 46. <i>Xerophila leucopsis</i>        | .. "                                |
| 47. <i>Gymnorhina tibicen</i>         | .. Carina                           |
| 48. <i>G. leuconota</i> ..            | .. Stawell                          |

| Name.                                 | Locality.                           |
|---------------------------------------|-------------------------------------|
| 49. <i>Cracticus destructor</i>       | .. Stawell and Carina               |
| 50. <i>Oreoica cristata</i> ..        | .. "                                |
| 51. <i>Eopsaltria australis</i>       | .. Stawell                          |
| 52. <i>Pachycephala gutturalis</i>    | .. Kow Plains                       |
| 53. <i>P. rufiventris</i> ..          | .. Stawell                          |
| 54. <i>P. gilberti</i> ..             | .. Carina and Kow Plains            |
| 55. <i>Climacteris scandens</i>       | .. Kow Plains                       |
| 56. <i>C. superciliosa</i> (?)        | .. "                                |
| 57. <i>C. leucophæa</i> ..            | .. Stawell                          |
| 58. <i>Sittella pileata</i> ..        | .. Kow Plains                       |
| 59. <i>Melithreptus lunulatus</i> (?) | .. Carina                           |
| 60. <i>Plectorhynchus lanceolatus</i> | .. Carina and Taillem Bend          |
| 61. <i>Glycyphila fulvifrons</i>      | .. Stawell and Kow Plains           |
| 62. <i>G. albifrons</i> ..            | .. Carina                           |
| 63. <i>Meliphaga phrygia</i>          | .. Stawell                          |
| 64. <i>Ptilotis fusca</i> ..          | .. "                                |
| 65. <i>P. chrysops</i> ..             | .. "                                |
| 66. <i>P. leucotis</i> ..             | .. General                          |
| 67. <i>P. auricomis</i> ..            | .. Stawell                          |
| 68. <i>P. cratitia</i> ..             | .. Carina                           |
| 69. <i>P. penicillata</i> ..          | .. Stawell                          |
| 70. <i>P. ornata</i> ..               | .. Kow Plains, Carina, Taillem Bend |
| 71. <i>Meliornis novæ-hollandiæ</i>   | .. Stawell                          |
| 72. <i>Myzantha garrula</i>           | .. "                                |
| 73. <i>M. flavigula</i> ..            | .. Carina                           |
| 74. <i>Acanthochæra carunculata</i>   | .. Stawell                          |
| 75. <i>A. rufigularis</i> ..          | .. Stawell, Carina, and Kow Plains  |
| 76. <i>Pardalotus ornatus</i>         | .. Carina and Kow Plains            |
| 77. <i>P. punctatus</i> ..            | .. Stawell                          |
| 78. <i>P. xanthopygius</i> ..         | .. Carina                           |
| 79. <i>Hirundo neoxena</i>            | .. Taillem Bend                     |
| 80. <i>Petrochelidon ariel</i>        | .. "                                |
| 81. <i>Anthus australis</i> ..        | .. General                          |
| 82. <i>Artamus superciliosus</i>      | .. Carina and Kow Plains            |
| 83. <i>A. personatus</i> ..           | .. "                                |
| 84. <i>A. sordidus</i> ..             | .. Stawell                          |
| 85. <i>Staganopleura guttata</i>      | .. "                                |
| 86. <i>Podargus</i> (sp.) (?)         | .. Carina                           |
| 87. <i>Eurostopus albigularis</i>     | .. ,, (heard at night)              |
| 88. <i>Ægotheles novæ-hollandiæ</i>   | .. "                                |
| 89. <i>Dacalo gigas</i> ..            | .. Stawell                          |
| 90. <i>Cuculus pallidus</i> ..        | .. "                                |
| 91. <i>Cacomantis flabelliformis</i>  | .. Carina                           |
| 92. <i>Mesocalius palliolatus</i>     | .. "                                |
| 93. <i>Chalcococcyx basalis</i>       | .. "                                |
| 94. <i>Glossopsittacus concinnus</i>  | .. Stawell and Carina               |
| 95. <i>G. porphyrocephalus</i>        | .. Kow Plains                       |
| 96. <i>G. pusillus</i> ..             | .. "                                |
| 97. <i>Cacatua galerita</i> ..        | .. Carina                           |
| 98. <i>C. leadbeateri</i> ..          | .. Kow Plains                       |
| 99. <i>Platyercus eximius</i>         | .. Stawell                          |
| 100. <i>Barnardius barnardi</i>       | .. Kow Plains                       |
| 101. <i>Psephotus hæmatonotus</i>     | .. "                                |
| 102. <i>P. multicolor</i> ..          | .. "                                |

| Name.                                   | Locality.             |
|-----------------------------------------|-----------------------|
| 103. <i>Geopelia tranquilla</i> ..      | Tailem Bend           |
| 104. <i>Phaps chalcoptera</i> ..        | Carina                |
| 105. <i>Microtribonyx ventralis</i> ..  | Kow Plains (Mumble)   |
| 106. <i>Zonifer tricolor</i> ..         | Kow Plains and Carina |
| 107. <i>Peltohyas australis</i> (?) ..  | Kow Plains (Mumble)   |
| 108. <i>Himantopus leucocephalus</i> .. | " "                   |
| 109. <i>Notophoxyx pacifica</i> ..      | " "                   |
| 110. <i>Anas superciliosa</i> ..        | " "                   |
| 111. <i>Nettion castaneum</i> ..        | " "                   |
| 112. <i>Nyroca australis</i> ..         | " "                   |

## Notes on Birds Found Breeding near Mackay, North Queensland.

BY E. M. CORNWALL:

### PART II.

IT was with a considerable amount of surprised delight that I first heard in this district the guttural note of the Black Butcher-Bird (*Cracticus quoyi*). At about sundown I was quietly working my way through a bit of thick jungle just above the margin of the mangroves when the note was sounded within a few yards of me. I tried hard to obtain a good view of the bird, but it was shy, and kept so well screened with thick foliage that a mere shadowy glimpse was all I could obtain. However, very shortly afterwards I had ample opportunity of completing the identification, and found that the bird is not by any means a rarity in this district. They love the muddy fastnesses of the mangroves, and to observe them "at home" one must be prepared to put up with much discomfort. When the tides are near the mangrove flats are sometimes dry for days at a time; then they are comparatively firm, and walking is not difficult, but when the big tides flood them every day they are veritable quagmires, and one flounders knee-deep at every step, whilst countless myriads of sand-flies and mosquitoes add to the general discomfort. Black Butcher-Birds are very local in their habits. Once a pair is located they may always be found within a very short radius. They nest year after year in the same locality, and the remains of several seasons' nests may be found in the adjoining trees. Hitherto I have not noticed a brown specimen in this district. Nests, each containing three eggs, were noted on 11th and 13th November. Once only have I found *C. quoyi* nesting away from the mangroves. The nest was then placed amongst a parasitic growth in a swamp tea-tree, and contained three fresh eggs. In an adjoining tree were the remains of the previous season's nest.

The Black-throated Butcher-Bird (*Cracticus nigrigularis*) is a



very robust species, and may be found all over the forest country. They are early breeders; well-grown nestlings were noted on 20th October, and a clutch of three eggs which was found on 23rd October was very hard set. After that date many young birds were noted, but no eggs were found.

Our lovely little representative of the large family of Humming-Birds, the Sun-Bird (*Cinnyris frenata*), may be noted almost everywhere. Its dainty pensive nest is quite a common object in outbuildings or verandahs, both in town and country, whilst many are found suspended over water in the swamps or snugly hidden away amongst the dense thickets of *Lantana*. When robbed of their eggs they sometimes lay again in the same nest. A friend of mine took four pairs of eggs from the same nest at intervals of exactly seven days. They laid a fifth pair, and reared their young, my friend considering that their pertinacity had been fairly tested and was worthy of reward. The nesting season extends from September to February, but odd pairs may be found breeding both before and after those dates. Two eggs form the usual complement, but on 26th December last a nest was found which contained the unusual number of three eggs.

Of a modest and retiring disposition is the White-breasted Honey-eater (*Glycyphila fasciata*), and to find it at home one must again brave all the discomforts of swamp work. The nest is a pretty dome-shaped structure, made of the paper-like bark of the *Melaleuca*, and suspended over water at the extremity of the most slender twigs, where they are safe from snakes and other vermin. The Square-tailed Cuckoo (*Cacomantis variolosus*) often chooses the nest of this bird in which to deposit its eggs, and it is particularly noticeable that when the Cuckoo's egg is deposited the Honey-eater lays two eggs only, but when left to itself the usual clutch is three. They are very late breeders. We were through the swamp at frequent intervals after the early part of October, but it was not until the 26th of December that they were seen to be building. After that date they were plentiful enough in the localities which suited them, and we found fresh eggs up to the middle of February.

On the fringes of the mangroves, more especially where they merge into open forest country, the little Brown Honey-eater (*Glycyphila ocularis*) is particularly abundant. All they lack in brilliance of plumage finds ample compensation in volume of sound, for surely never before was so small a body endowed with such powerful vocal abilities. They nest amongst the mangroves, and generally choose the time that the latter are in bloom—September, October, and November. The nest is a pretty little cup-shaped structure, and those I have found have been placed about 4 or 5 feet from the ground. Two eggs constitute the clutch.

The Fasciated Honey-eater (*Ptilotis fasciogularis*) is another robust and noisy species. Although their favourite haunts are the mangrove patches on the islands close to the coast, they are often met with along the creeks and rivers, whilst odd pairs may be noted in some of our town gardens. Nests have been noted at Green Island, some 12 miles to the north of Mackay, where they are particularly abundant; and on 18th November, whilst visiting Victor Island, I found a pair of beautiful fresh eggs, and also saw a nest containing two young birds, which were nearly fledged. That their nesting season is a much-extended one is proved by the fact that Mr. H. Neilson, whilst visiting a Darter and Cormorant rookery in Thompson's Creek during the last Easter holidays found fresh eggs of the Fasciated Honey-eater.

The Yellow Honey-eater (*Ptilotis flava*) chooses to live in town or in close proximity to the homes of settlers, where orange, lemon, or mango trees offer ideal nesting sites. They are late breeders. Eggs were noted in January and February, and on 20th May a pair was busy building in a mango tree in a town garden. At the same time a pair reared a brood in one of the fine fig trees which adorn our streets, and when the young were nearly able to fly they proved a source of great anxiety to the cabmen on the rank by repeatedly falling out of the nest on to the roadway beneath. They were replaced time after time, and one can only hope that they did not ultimately come to grief.

Shoal Point lies about 15 miles to the northward of Mackay, and forms the southern boundary of the shallow waters of Habana Bay. Off the Point about 2 miles lies Green Island, a pretty, scrub-clad little islet, where a pair of White-bellied Sea-Eagles (*Haliaeetus leucogaster*) have their nest and the Nutmeg-Pigeons (*Myristicivora sphenorrhoa*) and Fasciated Honey-eaters (*Ptilotis fasciogularis*) rear their broods amongst the mangroves which fringe its shores. When the tide is low there are vast areas of sand-banks and mud-flats laid bare, where many wading birds find living easy, secure in their loneliness, for the locality is far removed from the beaten track of the pot-hunter.

The Point itself rises gradually from the sand-ridges near the beach into a prettily-rounded, verdure-clad hill, and right out on top of this scrub, on a mass of climbers which smothers the crown of a tall scrub tree, the Jabirus have placed their nest. The nest was discovered by Mr. H. Nielson on the 30th of August last, when he and the writer were "combing" the beach in search of the nests of Pied Oyster-catchers, Red-capped Dottrels, and Long-billed Stone-Plovers. A white spot on top of the scrub caught Mr. Nielson's eye. He drew my attention to it, and the binoculars defined a large bird of some sort sitting on a nest. Thinking it



Young Jabirus (*Xenorhynchus asiaticus*) on Nest.

FROM A PHOTO. BY H. NIELSON.



was the White-bellied Sea-Eagle, we took careful bearings and plunged into the scrub, and searched for some considerable time before we found the tree in which the nest was situated.

Mr. Nielson is a fine climber, and very soon he was forcing his way upwards amongst the mass of creepers with which the tree was smothered, and ere long shouted down the intelligence that the nest contained three young birds. This was surprising—to find three young Eagles in a nest; but then doubts began to assail my friend. First of all, the birds had straight bills, and their feet had no claws, and slowly the fact dawned upon him that they were Jabirus,\* and at that moment, as convincing argument, the parent bird flew slowly past.

The nest was a large, flat structure, composed principally of a long trailing grass which grows along the sea-shore, few, if any, sticks being used. It was placed on a mass of creepers large and strong enough to support the birds if they got out of the nest. The young birds were ungainly-looking creatures, and lay flat in the nest, making no attempt to move when Mr. Nielson handled them. They were judged to be about two weeks out of the egg.

On 6th September I visited the spot again, in company with Mr. S. W. Jackson, with photographic intent, but doubts as to the strength of the branches on which the nest was placed caused us to abandon the idea for the time.

Again, on the 13th of September, Mr. Neilson and myself were there with the camera, the former being determined to obtain a picture if possible. He had a look at the birds, which had grown much, but were not well feathered, and so we decided to wait a little longer. Four weeks later, on 11th October, we journeyed that way again, fully equipped with rope ladder, spare ropes, lashing, &c., for a determined onslaught with the camera. Mr. Neilson was the operator, and after infinite trouble he rigged a temporary platform of saplings on top of the network of creepers, lashed the tripod there, and whilst I shouted instructions from below he exposed four plates on the interesting group. It was not by any means a good photographic day—heavy clouds were being driven before a stiff south-easterly wind, and at times the operator and camera were swaying dangerously from side to side as the heavy gusts struck the tree-tops. However, after two hours' anxious work the young Jabirus were finally left to the care of their parents, and scarcely were camera and gear packed up than the rain came down in torrents and drenched us to the skin on our homeward way.

Mr. Neilson judged that the young birds would be able to fly by the end of the month; they would then be about three months old.

\* *Xenorhynchus asiaticus*.

## Annotations.

BY A. J. CAMPBELL, COL. MEM. B.O.U.

NEW PARDALOTE FROM NORTH-WESTERN AUSTRALIA.—In a select parcel of bird-skins exhibited at the Melbourne annual session of the A.O.U. by Mr. H. L. White, of Scone, N.S.W., was a Pardalote resembling *P. rubricatus*, but much lighter coloured than any known species of the genus. The bird was collected by Mr. F. Lawson Whitlock in the region of the Coongan and De Grey Rivers.

If the pale-coloured plumage is a type of the species of that locality, I venture to name the bird *Pardalotus pallida*, or the Pale Red-browed Pardalote.

*Description (Female).*—Forehead crossed by a narrow band of buff; crown and back of head black, each feather having a spot of white near the extremity; back of neck, back, mantle, and wing coverts light brownish-grey, each feather with a central (darker) stripe; rump buff coloured; wings brown or dark grey, margined with white; small portion of the base of the primaries and the outer margins of the secondaries yellow or deep chrome; before the eye, spot of orange chrome; above and behind the eye, stripe of buff; upper tail coverts greenish or citron yellow; tail blackish-brown, the extreme tips of the feathers being white; under surface, including tail coverts, dull white, except the chest, which is bright yellow. Dimensions in inches.—Length, 4.0; bill, 0.25; wing, 2.5; tail, 1.2; tarsus, 0.8.

The following are collector's field notes respecting the nidification of the species:—

“This was the common Pardalote of the district. On the Coongan, wherever there were gum-trees, there its monotonous notes were sure to be heard. On the De Grey it was less common, and I heard little of it between the latter river and the coast. On the upper Coongan the main river was more favoured than the tributaries, but the nests were always in the banks of side creeks or even in little rivulets of no more than 1 foot or 18 inches deep. Where the soil was loamy there these rivulets had been scoured out by the heavy rains, and I could usually locate the tunnel without much difficulty. A little experience, too, soon enabled me to distinguish an old tunnel from a new one, and also to ascertain, by means of a slender stick, the probability of the nest containing eggs or being unfinished. The tunnels varied from 20 inches to 2 feet in depth, and a chamber was excavated at the end to contain the nest. The latter was very substantial—the foundation of strips of cajaput bark and the cup neatly lined with fine grasses. The eggs were usually three in number, but not infrequently only two. As incubation is nearing the end the female sits closely, and I have several times started to dig out the nest before she flew out of the tunnel.

“The eggs are pure white, large (for so small a bird), and without much gloss. As a rule they are rather broad ovals.”

[A clutch of three eggs in Mr. White's collection, taken by

Mr. Whitlock (29/8/08), measure in inches respectively—  
(1) .72 x .57; (2) .72 x .55; (3) .72 x .55.—A. J. C.]

*GYMNORHINA LONGIROSTRIS* (Milligan), (Long-billed Magpie).—Mr. White also exhibited at the above-mentioned session a series of 10 sets of these new eggs—2 singles, 1 pair, 4 each 3, and 3 each 4—collected near the Coongan River, North-Western Australia, by Mr. Whitlock. There is not much variation in the eggs, which mostly resemble the “c” variety\* of *G. tibicen*. Description.—Ground colour greyish-green, moderately marked with roundish blotches and spots of chestnut and purplish-brown. In two sets the markings almost covered the whole surface. Texture of shell somewhat coarse, surface slightly glossy. Dimensions in inches.—A—(1) 1.56 x 1.1, (2) 1.53 x 1.06, (3) 1.52 x 1.05, (4) 1.5 x 1.03; B—(1) 1.52 x 1.05, (2) 1.5 x 1.05, (3) 1.49 x 1.06.

*PACHYCEPHALA LANIODES* (White-bellied Thickhead).—In my book (p. 328) I mentioned that Gould founded this species upon a single specimen procured on the north-west coast, that no information whatever had been (up to date) obtained respecting the habits and nidification of this rare bird, and asked—“Who will be the first field naturalist to fill up the hiatus?” By the indomitable perseverance of Mr. Whitlock in wading through the pestilential mangrove quagmires of the North-West collecting for Mr. White the question has been answered.

Let Mr. Whitlock give his own interesting account:—

“As far as my knowledge at present goes this appears to be a coastal species. I have only met with it in the mangrove thickets at Condon; but on arrival at Port Hedland I slept on board a small coasting boat in the estuary there, and at early dawn I could hear the loud, joyous notes of this Thickhead from the mangroves about a third of a mile away.

“At Condon my attention was soon attracted by this bird; and, being acquainted with the song of other species of Thickheads, I had little doubt as to what class the bird belonged. There is one main estuary running inland for perhaps a mile and a half, but with numerous side creeks. The rise and fall of the spring tides amounting to a little over 20 feet, the foreshores of the beach and main creek are all lined with mangrove thickets, and the same is the case with the banks of the tributary creeks. But it is only in the estuary the present species is to be met with, the mangroves of the open beach, despite their more extensive area, being quite untenanted.

“On the eastern side of the estuary I commenced my search, as I could hear the loud notes resounding from a thicket where the mangroves were tall and more slender, and quite a quarter of a mile away. To reach the spot it was necessary to cross the main creek at low tide; and the slippery, tenacious mud made the walking the reverse of pleasant. I tried to steal upon the songsters

\* See “Nests and Eggs,” p. 291.

without disturbing them, but the mangroves were too thick, and the only result was the sudden cessation of the song. I then resorted to the artifice of imitating the cry of a bird in distress, and in a few seconds the male, followed by the female, was within a few feet of my head. One glance was sufficient to recognize the species, the birds being not in the least timid. After admiring the male, I turned my attention to the brown and boldly striped female, in the hope of getting a clue to the locality of the nest. She presently slipped away, but it was quite impossible to follow her with the eye—the vegetation was too thick, the light very deceptive, and the swarms of sand-flies and mosquitoes were quite blinding. I commenced a systematic search in what I considered the most likely parts of the thickets. After considerable trouble I found a nest, unmistakably a Thickhead's, where the mangroves were very dense and mere saplings. It was about 8 feet from the mud, and contained one fresh egg. In passing, I may remark that this was the only nest I could reach without climbing. The egg was true to type—ground colour dark cream, or even stone colour, darker than eggs of *P. occidentalis*, *P. rufiventris*, or *P. falcata*; the spots chiefly at the larger end, and of a clouded neutral tint. I subsequently found the colour of the spots varied much in intensity. The nest was flat and not very substantial. Outside measurements between 5 and 6 inches, the cup neatly finished, but the egg visible from below. The fate of this egg is a mystery. I left it undisturbed, in the hope of securing a full clutch; but when I returned three days later the nest was empty. I charged a Malay boy who was crabbing in the creek with tracking me up and taking the egg. He denied it flatly, and I believe truthfully. Crows were very scarce, and lizards and snakes still scarcer. Can either of the parents have resented my handling the egg and have removed or destroyed it themselves? This was very disappointing, but all that could be done was to find another, and I had the encouragement, too, that in searching for nests of the present species I had a chance of finding nests of *Zosterops lutea* and other species present in the mangroves. After being nearly eaten alive by the insect pests, and after several disappointments in finding nests with newly-hatched young, I succeeded in getting three more nests with eggs—in two cases quite fresh, and in the third considerably incubated. In addition, I found three nests in course of construction. All these nests were where the mangroves were tallest, and generally where they were most dense. The highest nest I climbed to was quite 15 feet from the mud below. All this was only accomplished at the expenditure of much labour and discomfort, and at the risk of an attack of malaria. My worst experience was at low tide, before sunset, when the bad odour from the mud was quite perceptible. It is advisable to mark the site of an empty nest with a strip of red rag if it is to be readily re-discovered. I tried white wadding, and to my cost found it useless and quite invisible at a short distance, owing to the infiltration of the innumerable rays of light through the foliage of the man-



groves overhead, the next tide, of course, washing out all previous tracks.

“As a rule the male sings at no great distance from the nest, but he takes no part in building, or even in feeding the young. His business in life is chiefly song, but he warns the female at the approach of an intruder, and I found she flew from the nest towards me as I approached. The call note is a soft, clear whistle, with just the suspicion of a falling cadence at the end of it. The alarm note is somewhat sharp and harsh; the song very loud, clear, and musical, and is poured forth in an impetuous and joyous manner, characteristic of the genus. The male sang quite without fear within a few feet of my head. The female, too, responds, but her efforts are comparatively feeble, but for all that not unpleasing.

“I had a glimpse of one nestling, but could neither catch it nor shoot it without blowing it to pieces. It appeared to be somewhat mottled on the upper part, and was heavily striped on the breast.

“In no case did I find more than two eggs or young. In a single instance the nest contained but one newly hatched bird.”

The egg may be described thus:—Oval in shape; texture of shell fine; surface glossy; colour light olive, with a moderately marked belt of umber or olive brown and dull (underlying) spots. Dimensions in inches—(1) 1.04 x .73, (2) 1.0 x .73.

It will be observed that the eggs resemble the *P. rufiventris* and *P. falcata* type, and are next in size to those of *P. olivacea*.

STREPERA GRACULINA (Pied Crow-Shrike).—At the Bird Observers' Club's dinner given on the 23rd of November in honour of the official (inter-State) delegates attending the Bird Protection Conferences in connection with the annual (Melbourne) session of the A.O.U., a fine series of these eggs, exhibited by Mr. H. L. White, Scone, N.S.W., graced the table.

Until recently Mr. White had difficulty (chiefly on account of the inaccessible sites of nesting) in adding to his collection the eggs of this bird, which is fairly numerous in his district—Upper Hunter River. The eggs displayed great variation of ground colouring, from pale purplish to rich vinaceous buff, either blotched and spotted with umber and dull purplish slate or rich chestnut or reddish-brown. Dimensions in inches.—A—(1) 1.93 x 1.24, (2) 1.71 x 1.14, (3) 1.71 x 1.15, (4) 1.7 x 1.16; B—(1) 1.6 x 1.15, (2) 1.6 x 1.13, (3) 1.59 x 1.13, (4) 1.59 x 1.13.

A typical nest is composed of sticks and twigs lined with finer rootlets. Inside dimensions, 6 inches across by 3 inches deep.

I cull the following from Mr. White's field notes:—

“During the third week of September one of my men reported having seen a nest of the ‘Currawang’ (*Strepera graculina*), with the bird sitting, and that, although situated in a very bad place, it might possibly be reached with a long scoop. Being very busy with shearing, I could not get away at the time, but on the 30th of the month a fall of snow delayed work for a day, so,

armed with a 20-foot bamboo, and accompanied by two boys, I determined to secure a clutch of these rare eggs if possible. I found the nest to be about 35 feet up in an apple (*Angophora*) tree, on a very thin horizontal limb, projecting over a precipice which formed one side of a scrubby, rocky ravine—a most dangerous position for climbing. I sent one of the boys up a limb overlooking the nest, and was agreeably surprised upon hearing him exclaim—‘Four eggs,\* and one of them a whopper.’ The second boy and the scoop were now sent up. No. 1 boy could not manage the long rod by himself, so No. 2 assisted. After half an hour’s hard work the four eggs were safely landed and the nest secured. During the operation both birds continued to fly about quite close to us, uttering their loud, harsh cries of alarm or anger.

“Of some dozens of *Strepera graculina* nests observed in this locality, I have not seen one in a reasonably accessible position; the few clutches of eggs obtained were taken with great difficulty, and always by the aid of a very long scoop-rod.”

COLLOCALIA FRANCICA (Grey-rumped Swiftlet).—One of the most important oological items of the season has been the discovery by Mr. E. J. Banfield of a colony of these Swiftlets nesting in a cavern on his verdure-clad islet—Dunk—near Cardwell, North Queensland, the very island where Macgillivray in the *Rattlesnake* procured a bird many years ago. Subsequently, similar birds were obtained on the mainland opposite, and named by Dr. E. P. Ramsay *C. terræ-reginæ*. This name may stand yet.

*Nest*.—Small, basket shaped, composed of fine dry grass and thread-like fibre, sometimes a few feathers or pieces of green moss added, all firmly cemented together and adhering by the side to the wall of a cave. Dimensions, 2 to 2½ inches across by about ¾-inch deep.

*Egg*.—Clutch, one; elliptical in shape; texture of shell very fine; surface slightly glossy; colour pure white. Dimensions in inches—(a) .81 x .5; (b) .82 x .53.

Mr. Banfield has obligingly forwarded the following interesting observations:—“My discovery this day (18/11/08) of a colony of the Grey-rumped Swiftlet enables me to send by parcel post nests (2), eggs (3), and unhatched chick in formalin solution. On 17th September last (as I advised you) I found an incomplete nest in a gloomy cave on one of the highest points of the island, from which fragment you guessed the identity of the builder. A succession of adverse circumstances prevented further investigations until to-day. I was fearful that the breeding season in the meantime might have passed; but, as the birds are among the permanent residents, I concluded that a sample of a complete nest might be procured, even though the rearing of families was over.

\* In “Nests and Eggs” (p. 58) I give the clutch for this species as 2-3. The maximum should be raised to 4, since Mr. White observed several other nests containing that number.

“On this occasion I went to a locality where I had often seen the Swifts darting among huge blocks of granite a few feet above high water mark on the weather side of the island. They were plentiful and very active, but no nests were to be seen in the crevices I considered favourable. When, however, we began to explore a darksome cavern well hidden in the jungle, the excited fluttering of invisible birds revealed a hitherto well-kept secret. When our eyes became accustomed to the dimness we saw that the roof of the cave (which is fairly smooth and regular, with an inclination of about 30 degrees) was studded with nests. I counted 53, placed irregularly about the middle of the cave; none on the walls. Some nests were apparently not quite finished; twenty contained a single white egg each; none contained young. All were adherent to the roof by a semi-transparent white substance resembling isinglass, with which also the grass, tendrils, and bark composing the nests were consolidated. The vegetable material of which the first nest found (17th September) was made was quite green and the gluten moist and sticky. Those of to-day were hard—glued into solidity. After the first fright the birds became very quiet and confiding. A young one flew into my hand, and I detained it for a while without a struggle. Another tried to snoodle into the shirt-pocket of the blackboy who accompanied me. Several brushed against our faces. The weather was rather cloudy, and what with the screen of foliage and the prevailing gloom of the cavern we could not always distinguish the nests. When the sun shone brightly they were all readily discernible, those with the single white egg looking very quaint. As they flitted in and out of the cavern the birds were as noiseless as butterflies, save when they wheeled to avoid each other. Those which were brooding, as they flitted over their nests and clung to the edges, uttered a peculiar note, hard to render into words. To my ears it seemed a blending of cheeping, clicking, and chattering, yet metallic, and not very unlike the quick winding up of a clock. One bird flew to her nest a foot or so from my face, and clung to it. To test its timidity or otherwise I approached my face to within 2 inches of her, but she continued to scrutinize me at even these close quarters with charming assurance. Then I gently placed my hand over her. She struggled gently for a few seconds and then remained passive, her bright eyes glinting in the gloom. She was a dusky little creature, the primaries, the back of the head, neck, shoulders, and tail being black, but when the wings are extended for flight the white down at the base of the tail is very conspicuous. After a few minutes I put her back in the nest and she clung to it, having no fear of me. I noticed that the beak was very small, the gape very large; the legs short and the toes slender. We remained in the cave for about half an hour, throughout which time the birds came and went, indifferent to our presence.

“In the interests of science, but to the violence of my own sentiments, I secured two specimens of the nests and four eggs for you. One egg was quite fresh; one had just germinated; the in-

incubation of the third was well advanced; the fourth contained a live chick. It is interesting to note that, while many young birds were fluttering about in the cave, though there were none in the nests, the eggs were in successive stages of incubation. The architecture of the nests, the way in which they were attached to the roof, and the attitude of the birds clinging to and brooding over them, resembled the picture in Richard Kerr's book—'Nature, Curious and Beautiful'—of the Swifts (*Collocalia*) which build the edible nests, which picture reproduces an exhibit in the Natural History Museum, London. True, the shape of the nests does not exactly correspond, though the scoop-like general appearance is preserved.

"The cave, which is invisible from the sea, is only about 30 feet above high water mark, and the entrance which the birds favour is, strange to say, averse from the sea and much obscured by leafage. Altogether the incidents connected with this experience were very pleasant."

### Notes on the Migration of *Apus (Micropus) pacificus*, Lath.

BY ROBERT HALL, C.M.Z.S., COL. M. B.O.U.

WHILE in Vladivostock in May, 1903, I became aware of the presence of thousands of birds, filling the stormy night air with loud and terrified call notes.

Lieut.-Colonel Lochvitsky informed me that it was the usual time for the migration movement of Ducks, Swifts, waders, and other birds northwards. It is said to be noticeable by all the people, as if the birds were directly upon a defined migration course. The Russian block calendar of 13th May (= English 26th May) makes a definite statement to the effect that the Swifts arrive at Vladivostock from the south, and travel northwards. The Australian White-rumped Swift does actually pass at that time. I found it nesting in large numbers in the perpendicular cliffs of the River Lena, about one hundred miles down the river from Vitim, on 16th June. On 27th June, 1903, in Yakutsk, lat. 62° N., I found it nesting under the verandah of the market place. The birds were not seen further north, although the cliffs were good for the purpose of nesting, and food seemed plentiful. My companion, Mr. Trebilcock, and I travelled a further 1,200 miles down the river to the delta, and saw nothing more of them. Yakutsk, in 1903, was the northern end of their wonderful journey, so far as that tract of Siberia was concerned. I had not been able to land and examine the nests in the cliffs further up the river. Now, it seemed just a matter of care to take the number of eggs and young from the market-place that would satisfy the Australian collector. However, care was not the word to fit the occasion, for every Russian has an almost religious belief in the utilitarian value of the Swift and Swallow. On one occasion a burly Russian



Market Place, Yakutsk, Siberia,  
Where White-rumped Swifts (*Micropus pacificus*) Nest.

FROM A PHOTO. BY MONS. ZOYEF.



disturbed my investigation of a Martin's nest on a river-bank. He was furious at my breaking into the home of a sacred bird, and seemed resolved that I must stay my hand or drop below into the river. A strange altercation ensued, during which I was only able to use the words "Ispravink" and "Musée" ("Police" and "Museum") in defence. These had the desired effect, however, and he went away in great wrath. Even the hospitable Chief of Police, whose guests we were, was not anxious to satisfy such enthusiasm. It could not be done in daylight, even for scientific purposes, and, as we had a sun that did not fully set, there seemed to be no opportunity for us. After a week's stay, we were accommodated with the services of a peasant and a ladder, and finally witnessed and handled the real things—eggs, nest, adult bird, rafters; even the atmosphere was there. The young were just leaving the nest. One fully-fledged bird was miserably thin; there was scarcely any fatty tissue about its body, and the sternum was only covered with dwarfed muscles. A second young bird was particularly fat.

These birds congregate in large numbers, but do not breed in close company. They fly quickly, and have a single shrill note. The bird has a strong grasp (with its four toes in the same plane), which is enough to pierce the fingers and draw blood. The nest consists of a few straws and feathers cemented by saliva. The eggs were two or three to a clutch. The parents occasionally worry the feather-bred Swallows which associate with them in nesting. This species was not met with lower down the river than Yakutsk. From 40° S. in Victoria to 62° N. in Siberia is a long fly. The period of flight from the time of leaving the south in early autumn to the time of arriving in the Japan Sea could be gauged if only some ornithologist had the date of leaving Victoria in 1903.

The illustration shows the outer verandah of the market square in Yakutsk, under which *Apus (Micropus) pacificus*, Lath., had built many small and strangely constituted nests. The negative is by the Czar's officer, Mons. Zooyef, Governor of Olekminsk.

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### Stray Feathers.

NEW FOSTER-PARENTS.—In a recent letter received from Mr. C. M'Lennan, Carina, Victoria, he named *Hylacola cauta* and *Malurus melanotus* as new foster-parents for *Chalcococcyx plagusus*.—F. E. HOWE. Albert Park (Vic.), 10/12/08.

\* \* \*

RHIPIDURA DRYAS (Math., Handl., p. 65).—I received this bird in a small collection of skins sent me from near Wyndham, N.W. Australia, by Mr. J. P. Rogers. I think this is a new locality for this species.—GREGORY M. MATHEWS. Watford, England.

CORCORAX.—I have confirmed the fact that two females at least of *Corcorax melanorhamphus* lay in one nest. I examined a nest on Wednesday (7/10/08) just before sunset, and found it empty but ready for eggs; examined it again following Saturday and found *five eggs* of two distinct types.—H. L. WHITE.

\* \* \*

BIRD ROBBERS.—One day in October, 1897, while wandering through gums and bull-oaks at Springvale, I noticed an Orange-winged Tree-runner (*Sittella chrysoptera*) carrying something in its bill. Tracing it to a high fork in a bull-oak (*Casuarina*), I found it was nest-building. But the bird had not been long away on the search for more material before a Little Tit (*Acanthiza nana*) appeared and began to tug violently at some of the fibrous part of the Tree-runner's nest. It dislodged a piece and carried it off to its own nest not far away. This is the only instance of the kind I have ever noticed among native birds.—A. G. CAMPBELL. Pomonal, Victoria.

\* \* \*

YOUNG STONE - PLOVERS (*Burhinus grallarius*) AND SHINGLE.—Having received two young birds from a friend as a donation towards my collection, I at once placed them in the aviary. Soon after, on my approaching them, I was struck with the quaint and peculiar attitude they fell into. One would think at times the earth had gaped and swallowed the pair; the similarity of colour in plumage and site selected for squatting by the birds would deceive the trained eye of a pot-hunter. It is the only means of concealment provided by nature against the searching eye of their greatest enemy, the Wedge-tailed Eagle (*Uroaëtus audax*). I photographed them as a study in colour protection. Although not in their natural haunts, they were very wild at the time, as depicted by the expression of fear and the outstretched attitude on the shingle. They have now become very docile, and never attempt to pose as per photo.—HARRY BURRELL. Manilla, New South Wales, 23/11/08.

\* \* \*

MORE NEW FOSTER-PARENTS. — *Acanthiza uropygialis* is among the foster-parents of *Chalcococcyx basalis*. I took a nest on Wednesday last (28/10/08) containing two eggs of *Acanthiza* and the Cuckoo's egg, all fresh. The nest was situated about 12 feet from the ground, in a dead bull-oak stump. The softer white wood had decayed and fallen away, leaving a shell outside about 1/8-inch thick, and a space of about 1 1/2 inches between it and the heart of the tree. A strip about an inch wide was broken out, just giving nice clearance for the birds, and the opening in the nest could be seen. Last year, on 6th October,





Young Stone-Plovers (*Buthius gyallarius*) "Planting."



I took an egg of *Mesocalius palliolatus* from the nest of *Acanthiza pyrrhopygia*. The nest was situated in a thick green bush, about 18 inches from the ground, and was only discovered by seeing the bird flush. The nest did not contain any eggs of the Tit, so I left it for several days before taking the Cuckoo's egg, which was then partly incubated.—P. T. SANDLAND. Balah, *viâ* Kooringa (S.A.), 30/10/08.

\* \* \*

MALURUS FIGHTING ITS SHADOW.—Referring to the note with this heading in *The Emu*, vol. viii., part 2, the following note of mine dated 28th July, 1893, may be of interest. The birds were *Malurus cyaneus*, the locality Adelaide:—Hearing some taps at my window, I looked up and saw a male and female *Malurus* flying at it. At first I thought they were trying to catch a small sort of fly on the other side of the glass, but as they continued doing this for about a week, off and on, I think the male must have been trying to attack his image in the glass, especially as the small flies could not always be seen at the spot to which he flew, and when he changed his position in the twigs of a tree in front of the window he usually flew to a different spot. But against this was the fact that he always flew up about 9 inches instead of horizontally forward. The female usually sits on a twig watching him, and very rarely flies to the window. On one occasion I opened the window at top and bottom. Twenty-eight times the male flew on, to the top of it, looked into the room, and then hopped back to his mate, while the hen only did it twice. Each seemed frightened to go in without the other. At last the male flew in below and at a looking-glass placed on the window-sill. Then, flying up, he flew on to the inside of the window, and, dashing against the pane, had to be caught and placed outside.—(DR.) J. BURTON CLELAND. Perth, W.A.

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EMUS AND BRUSH-TURKEYS IN ENGLAND.—It has been suggested to me that the notes which follow will be of interest to Australians. My uncle, Sir Edmund Loder, of Leonardslee, Horsham, Sussex, England, has upon his estate a reserve of some 300 acres of forest, securely fenced, in which he has endeavoured to acclimatize numerous animals and birds brought by him from various parts of the world. Beavers, capibara, &c., exist together with kangaroo and Emu. The Emus have successfully reared more than one brood of chicks, which when old enough are eagerly sought by zoological societies in England. The male Emu does all the sitting, and the female was so careless or aggressive during incubation that it was found expedient to shut her up away from her mate and her progeny.

A pair of Brush-Turkeys (*Catheturus*) are in the park also.

The male was very industrious in scraping up earth and vegetable *debris* into an egg-mound, which he attended regularly. When cold he scraped on more litter, and in the warm weather took some off. The keepers, not knowing the habits of the young, were nonplussed by their bolting into the coppice, for they are able to fly as soon as hatched. It is feared that the majority perished of cold or fell a prey to some marauding animal. Two or three were captured, however, and lived to be full grown. The next season an enclosure was put about the mound, but whether the season was too cold, or whether the male was not able to give proper attention to the mound, no chicks were hatched out that season.—E. T. HUBBARD. Glenorchy, Tasmania.

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ST. PATRICK'S RIVER (TASMANIA) NOTE.—During the early part of November I had the good fortune to spend a short holiday at St. Patrick's River, in the Patersonia district. The place at which I stayed was about 2 miles north and slightly to the west of where the A.O.U. had their camp-out after the last Hobart session. I found bird-life fairly plentiful, but some species entirely absent that were noted round Prestidge's during the camp-out. Thirty-five species were listed, as against eighteen mentioned as having been noted by the members, who were camped practically at the foot of Mt. Barrow. I have listed twenty-one species not mentioned in the account of the trip, and the campers saw six species not noted by myself. It is rather curious there should be such a difference in the lists when the distance between the two places is so small. Certainly the character of the country at St. Patrick's River is somewhat different to that round the foot of Mt. Barrow, being in places more open, with small, lightly-wooded flats along the river, and the hills were not too heavily encumbered with undergrowth. Where I was staying the Flame-breasted Robin (*Petroica plumicea*) was very plentiful, and three nests were found. Not a single specimen of the Scarlet-breasted Robin (*P. leggii*), noted so plentifully round Prestidge's, was to be seen. The Pink-breasted species (*P. rhodinogastra*) was recorded from Prestidge's, but I cannot do the same for it for St. Patrick's. Take another species of Robin, the Dusky (*P. vittata*). It is recorded by the campers, and I also have seen it plentifully in the same locality, whereas at St. Patrick's I found it very scarce. I noticed a nest of the Yellow-throated Honey-eater (*Ptilotis flavigularis*), containing three eggs, in a somewhat uncommon position—*i.e.*, in a tea-tree overhanging the river, some 10 feet from the surface. It was only discovered by seeing the birds fly in and out of the bush. As a tree that had fallen into the river had drifted under the nest, I was able, at the risk of a ducking, to crawl along to the nest and investigate. The eggs

differed somewhat from the usual type, being heavily banded with spots round the larger end. Another nest, containing two eggs, was found in the centre of a clump of band-grass, some 6 inches from the ground.—FRANK M. LITTLER. Launceston, 28/11/08.

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TASMANIAN NOTES.—My friend, Mr. H. C. Thompson, of Launceston, has sent the following notes made in the brief intervals of a busy life :—

“ The Scarlet-breasted Robin (*Petroica leggii*) had three eggs on 6th September, and on 11th September a Flame-breasted Robin (*P. phoenicea*) was sitting on three eggs in her nest built in Owen's timber yard on the Tamar, amid all the whirr of machinery and rending of logs. Probably the same pair built last spring on a rafter in a pole-shed situated in the Council's yard, Launceston, so they are not averse to the society of the working man. Two Brown-tails' (*Acanthiza diemenensis*) nests and several Yellow-tails' (*A. chrysorrhoa*), with eggs, were found at beginning of September. In a few reeds in the Dépôt grounds were two pairs of Grass-Birds (*Megalurus gramineus*), also a fine pair of Bald-Coots (*Porphyrio melanonotus*) about the same place. The latter were very tame ; one was resting on some bent reeds only a few yards from me, preening its feathers and taking no notice of me, not even when I stood up and got as close as the water would permit. When I projected a small missile into the water near him he flew very clumsily, with the legs hanging straight down, giving him an awkward appearance on the wing.” In a letter dated 1st November Mr. Thompson mentions that a third Coot had joined these two, one of which was sitting on five eggs, so it is evidently a case of a *ménage à trois*, one of those mysterious associations of three individuals which have been observed in the “ old country ” in several species, and discussed in the nature journals without eliciting any very satisfactory explanation. “ The Reed-Warblers (*Acrocephalus australis*) arrived at the North Esk about the middle of September. Several Yellow-throated Honey-eaters' (*Ptilotis flavigularis*) nests were found built close to the ground in sags on the side of a tree-clad hill, three of them having eggs by the 4th October. Some of the Robins had fledged young about the same time. Bronze-Cuckoos (*Chalcococcyx plagosus*) were making their voices heard ; and both the Grey-tailed Thickhead (*Pachycephala glaucura*) and the Spinebill (*Acanthorhynchus tenuirostris*) were sitting. No Shining Flycatchers (*Piezorhynchus nitidus*) had been seen by that date, although one or two pairs are generally located near Launceston each spring.” On 18th October Mr. Thompson and his son left home at 5.30 a.m. and went down the Tamar in a small boat, the wind southerly and cold until the sun got well up. At 8 a.m. they were at Tamar Island, and breakfasted in the

boat, as the tide was too low to allow of landing, on account of the mud-flats. After breakfast they landed and walked over the island, finding Reed-Warblers, Grass-Birds, Crescent Honey-eaters (*Meliornis australasiana*), and Swift-Lorikeets (*Nanodes discolor*). They then boated to the other side, and, landing, walked to some flats, where they found several Bald-Coots' nests, some with eggs, also a Swamp-Hawk (*Circus gouldi*) sitting. She would not allow them to approach very near, but took flight, rising high and then circling round with the wings quite motionless.—H. STUART DOVE. Moonee Ponds, 14/11/08.

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NOTES ON THE BLACK-FACED CUCKOO-SHRIKE (*Graucalus melanops*, Latham).—This fine insectivorous bird generally makes its appearance in the Hawthorn district each year about the end of March, and is to be seen during the day searching amongst the leaves and beneath the bark of trees for caterpillars, spiders, beetles, &c. One morning in March last my attention was drawn to one of these birds which was struggling to remove from the bark of a large red gum tree (*Eucalyptus rostrata*) a case of one of the case-moths (*Psychidæ*). These cases require rather a smart jerk to dislodge them from the bark or twig they are attached to. Knowing that most of these stick-cases contained fine fat larvæ, I was curious to see, firstly, if the bird was capable of removing the case from its fastening, and, secondly, how it would get the larva out of its stout covering if successful. I will now give a brief account of how the bird succeeded in doing this. Taking hold of the case with its beak by the lower end, and at the same time clinging firmly to the bark by its feet, by a series of short, sharp jerks, continued for some time, to my surprise it succeeded in removing it, when, flying off to an adjacent tree, carrying the case in its bill, it started to beat it, first to the right and then to the left, against a bough. After performing this operation for some considerable time, these continuous shocks were the means of driving the grub up into the neck of the case, when another dose or two of the same medicine forced it in a stunned condition to partly leave the case. Then, flying to the ground, carrying the case with it, the bird seized the grub, and, returning to a bough, gave it a smart rap, thus dislodging its prey. By the continuous tapping that was going on amongst the trees it was evident these birds were doing yeoman service. The Cuckoo-Shrike does good work in an apple orchard by eating the larvæ of the painted apple moth (*Teia anartoides*, Walk.), also another caterpillar similar in its habits to the above, but much larger, and very destructive to the foliage of the apple tree. Early settlers in the Melbourne district used to call this bird the Blue Jay or Banded Thickhead, and in the Warragul district, Gipps-

land, it was known as the Blue Pigeon. One characteristic action very noticeable in this bird is that upon alighting it never fails to lift first one wing and then the other, as if the first closing of the wings did not suit it. Although insectivorous, at times it likes a change of diet, and is very fond of berries, especially the fruit of the olive. I have seen these birds strip a large olive tree in a few days. Many years ago, while shooting in a paddock at Hawthorn, I came upon a flock of these birds fossicking around the dried-up carcass of a dead cow. Upon examining the carcass I found that they had been feeding upon what they could manage to pick from the ribs. Upon shooting one, I found that the stomach contained, besides rib pickings, several insects belonging to the order of *Colcoptera*.

Before concluding, I may mention that upon dissecting a Gréy Crow-Shrike (*Strepera cuneicaudata*, Vieill.), shot a few weeks ago in this district, the stomach contained scores of the large brown bull-ant, well known to those who have accidentally rested upon one of their mounds. This bird had collected them while they were moving up and down the trees in quest of food.

—C. F. COLE. Melbourne.

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NOTES ON SEVERAL BIRDS FOUND AT STRELLEY RIVER (PT. HEDLAND, MARBLE BAR ROAD), N.W. AUSTRALIA.—*Merops ornatus*.—Congregation in Clusters at Night.—August, 1907.—Numerous, sailing round water-holes catching wasps, &c. Found them congregating together at night, usually flying from various parts to one particular spot, and roosting together in low gums. They sat in rows close together, as many as seven or eight being counted in one row. Twenty or thirty were seen thus roosting for several nights in one particular sapling. As the nights were very cold, this may have been for warmth, or it may have been the congregating together before proceeding south. In September and October much fewer birds were seen, and these usually in pairs, the rest having evidently gone south. These pairs were nesting. 22nd September.—Nest in sandbank, about 3 feet in; four eggs with young birds forming, laid on the sand at the end of the tunnel, where was a small dilatation. A few small land-snail shells and wasps' wings formed a nest.

*Habits of Ptilotis carteri* (kindly identified by Mr. Milligan from skins).—August-October, 1907.—A very common Honey-eater amongst the eucalypts and tea-tree along the Strelley and Shaw Rivers. Resembles very closely in appearance *P. penicillata*, but of a brighter yellow. In nearly all specimens a very distinct blackish pre-auricular tuft of feathers. Habits almost identical with *P. penicillata*—the same way of flying and dodging amongst the trees, the same aggressiveness in attacking other birds, such as *Grallina* and *Rhipidura*. In this way and

by the chattering of a number of these Honey-eaters I was attracted to an Owl hidden in the leaves of a tree. The notes of the birds are identical, from the usual one to an occasional clear liquid whistle. Occasionally, just as does *P. penicillata*, a bird will be seen to mount into the air by a series of ladder-like rises, meanwhile uttering a peculiar liquid note, and then suddenly dive down into the bushes. Middle of August.—Nest with two fledged young in bulrushes over water. September.—Old nest in paper-bark tea-tree (*Melaleuca*), about 15 feet high, near main stem. 23rd September.—Nest in overhanging branch of eucalypt, about 8 feet from ground, with two fresh eggs.

*Nest and Eggs of Emblemia picta*.—On 11th August Mr. H. M. Giles, F.E.S., my companion, found the nest of this rare species by the female flying out of it. Later on we secured the female on the nest. There was an unfledged nestling and two eggs, both of which we succeeded in blowing, the young bird being preserved also. The nest, composed of grasses, was situated in a coarse tuft of spinifex (*Triodia*), not far from a dry watercourse. In the photograph\* the orifice of the nest in the tuft of spinifex can be seen. The nest has been deposited in the Western Australian Museum. Mouth of nest consists of fine flowering ends of spinifex (*Triodia*). Body of nest—about size of closed fist—buried in the spinifex tuft, and composed of woolly tufts of hair and woolly leaves of plants to form a compact nest. Eggs.—Colour pure white; with lens, surface has a dull gloss with occasional small pits. Shape, roundish oval, one egg larger than other; size, in lines (12 lines to inch), 6.1 x 5, 6.8 x 5.4.—(DR.) J. BURTON CLELAND. Perth, W.A.

### From Magazines, &c.

WOOD-SWALLOWS BREEDING IN CAPTIVITY.—In *The Avicultural Magazine* for September Mr. E. J. Brook has some notes on the breeding of the White-browed Wood-Swallow (*Artamus superciliosus*) in his aviary. The birds nested in a piece of tree-root with a rotten, cup-shaped hollow, in which they placed a few very small sticks, but made no regular nest. Of three eggs laid the first proved clear; the second, laid three days later, was broken; while the third, laid after an interval of four days, was successfully hatched. "Both birds sat, relieving each other at short intervals. The egg hatched on the 14th day, I think, and the young bird left the nest 14 days later. Both parent birds fed the young one, but the male was the best feeder, and much the keenest to find tit-bits, such as small flies, &c.

\* Dr. Cleland kindly sent a photograph of the nest *in situ*, but as the picture was evidently taken under difficulties it was not suitable for reproduction.—EDS.



Only live insects were given to the young bird until it left the nest, but since then the male has given it occasional morsels of the ordinary insectivorous mixture." The young bird was fed principally on meal-worms, other suitable insects being scarce.

At the time of writing Mr. Brook supposed that his was the first record of a Wood-Swallow being reared in captivity, but in the October number of the *Magazine* Mr. Henry Scherren writes:—"Looking over some old Reports of the Zoological Society, I came on the entry of *Artamus superciliosus* among birds bred at the Gardens in 1870."

\* \* \*

"A BIRD ENEMY—THE GOANNA."—Under the above heading "Goulburnite," in *The Argus* (Melbourne) of 5th December, 1908, thus graphically describes the operations and final discomfiture of a rascally nest-robber:—"Near my camp is a small dry box that was ringed years ago, and has gradually lost the greater portion of its head. The short broken limbs which project from the trunk are mere shells, and till last year these were tenanted by a Sparrow community, busy, yet squalid little beggars. Straws stuck out of the cracks, leaves, pieces of paper, and other litter were heaped at the entrances; and here and there, fluttering in the wind, were scraps of hayband and other fibrous nesting material, completing a picture of poverty-stricken decrepitude.

"One broiling day in summer there was great excitement in this bush slum. Panting birds were soon congregating from all quarters, the Miner, as usual, being well to the front, vociferously encouraging the Magpies and other fighters to the onslaught. The goanna\* was bent on plunder, and took little heed of the outcry, silently making from one limb to another, and visibly swelling as he cleared out each domicile. I made many attempts to dislodge him, but handy missiles were scarce, and my aim faulty. His tail would dangle from a hollow for minutes, then out he would back, bloated, but alert, and at my throw would quickly dodge to the other side of the limb, and craftily crawl to the next aperture. He had gone the whole round of the tree, and, fully gorged, was quietly awaiting my retirement before descending. The birds were sitting about, inactive, and for the most part exhausted and voiceless, and I was glad to take refuge from the glaring sun in the shade of a neighbouring tree. As I moved for shelter, the goanna changed his position on the tree, and this brought him within view of a Kestrel. From her nest-hole in a tall gum near the river bank she spied the fat rascal, as he hugged a branch, lazily moving his head from side to side, and in an instant his demoralization was complete. There was a lightning-like flash, and with

\* A large lizard, sometimes reaching 6 feet in length.—EDS.

almost equal rapidity the scared robber touched the ground, and scurried into the adjacent scrub, where he made good his escape. Strange to say, the Sparrows immediately deserted the locality, and the hollows of the old box have ever since been tenantless."

\* \* \*

THE PARTRIDGE-PIGEON (*Geophaps scripta*).—Mr. T. H. Newman, F.Z.S., M.B.O.U., in *The Avicultural Magazine* for October, writes of the nesting of this Pigeon, and, in some interesting notes, refers to the belief which has obtained, and for which Gould was largely responsible, that the young differs from that of other Pigeons in being clothed with down when hatched, and being able to fly strongly while still in the "down" stage. Mr. Newman says:—"They have nested freely this summer, and I hope my notes, made during the rearing of the young, may be the means of clearing up some of the mystery which has hung round the nesting of the genus *Geophaps*, for apparently the young of no other Pigeons have excited so much difference of opinion, and the statements that the young 'are hatched clothed with down, like a Quail,' and that they 'fly strongly when they are only as large as a Quail,' have led to the belief that these birds, which so wonderfully assimilate a Partridge in appearance and habits, are really more Partridge than Pigeon. It would be hard to find another case among birds of one group approaching another so closely in superficial details as the genus *Geophaps* does the Partridges. Yet in no point do they really differ from the more typical Pigeons." Dealing with the supposed precocity of the young, Mr. Newman quotes Mr. A. J. Campbell's\* comments on Gould's statement, with the field observations of Messrs. Charles and Harry Barnard, and states that these are in agreement with his notes. Mr. Newman's pair of birds nested in April, 1908; on the 24th of that month a broken egg was found, and on the 26th another was laid, but the birds did not sit. Early in May they were found to be sitting on two eggs, and on the 23rd a young bird emerged. The writer says:—"On the 23rd May one young one was hatched; the other egg contained a nearly full-sized dead chick. This is my note, made the same day:—'Young covered well with rather dark fawn down, but not more so than many other Doves; bill dark brown, almost black on edges of mandibles, a white knob on both mandibles at tip, tips of bill very pale grey, feet greyish pink.' A later note from another young one adds, 'the down is paler (pale yellow) on under surface,' and that there is 'a bare line down breast and abdomen.'" It is pointed out that "the young is no more clothed with down like a young Quail

\* "Nests and Eggs," p. 690.

than many other species of Pigeon." Attention is called to "the presence of an egg tooth on both mandibles; the upper one is of the usual triangular shape, while the lower one takes the form of a flattened semicircular nail." Mr. Newman continues:—"I am not aware that an egg-tooth on the lower jaw has been recorded in any species of bird, but it is evidently not so uncommon among Pigeons, as I found it present in the newly-hatched young of the Brush Bronze-wing (*Phaps elegans*), but very much smaller, and, to my surprise, I could just detect it in two young Picui Doves (*Columbula picui*), and in a young Diamond Dove (*Geopelia cuneata*). I think we shall hear more about this later on, as I have sent a two days' old young Partridge Bronze-wing to Mr. Pycraft, and he has promised to describe it to us." The young bird hatched on 23rd May was first noticed out of the nest when twelve days old, when it could run very fast. On 7th and 9th June, when this young one had left the nest two or three days, the old birds laid again, and another young one was hatched on 26th June; "on 30th June its eyes were opening, and feathers beginning to sprout, body sparingly covered with fawn-coloured down." On 5th July it first left the nest, and on 7th July ran about actively. Mr. Newman's notes will be continued.

\* \* \*

"THE HOUSE-SPARROW IN NEW SOUTH WALES."—The Department of Agriculture of New South Wales has issued in pamphlet form a report on the above subject, reprinted from *The Agricultural Gazette*, and prepared by Mr. C. T. Musson, of the Hawkesbury Agricultural College, Richmond, N.S.W. The author has had the assistance of nearly 400 correspondents in different parts of the State, who, in response to circulars, supplied much valuable information dealing with the bird from every point of view. The House-Sparrow (*Passer domesticus*) is said to have been introduced into New South Wales about 45 years ago, and is believed to have been brought to Victoria about the same time. It is only, however, within the last 10 years that it has become so numerous as to be considered a pest. While the farmer is the greatest sufferer from its depredations, owing to its destruction of grain, it is accused also of attacking soft fruits, particularly grapes, as well as destroying buds and injuring the leaves of fruit trees, eating vegetable seeds, damaging seedling plants, accumulating dirt about buildings, and contaminating the water supply. In addition it pilfers the food of domestic animals, eats useful insects, and sometimes destroys bees. As to its driving away or molesting other birds, the reports says:—"The Sparrow does drive away other birds, chiefly Swallows and Fairy Martins, often making use of their nests." To the credit of the bird may be placed the facts that

in the nestling stage the food consists largely of soft-bodied insects, and that in the adult stage considerable quantities of weed seeds are eaten, and at times aphides. In reference to the consumption of the farmer's grain, it is estimated that "they will eat  $\frac{1}{3}$  of an oz. of wheat per day—that is, 50 Sparrows would eat 1 lb. of wheat per day, besides wasting, perhaps, as much or more." Some investigation into the food question was made at the College, the stomachs and crops of birds killed on the College farm being examined, with the following results:—"109 Sparrows were examined at the College between August, 1904, and October, 1905, and the result showed that much food is taken from cereal crops; grapes were attacked in only two cases; a considerable number of birds (47 per cent.) fed on weed seeds, in some cases to a large extent;  $15\frac{1}{2}$  per cent. fed on noxious insects; in only one case were beneficial insects destroyed; 31 per cent. fed on small insects not known to interfere with crops in any way, and therefore must be classed as neutral; in eating them Sparrows cannot be considered as doing any good for us; 88 per cent. fed on cereal grain of some kind. These results certainly point to a considerable amount of good being done by the clearing away of weed seeds and the destruction of a quantity of noxious insects, the final results being, however, against the Sparrow." The rapid spread of the pest is explained by the following notes on their breeding habits:—"The number of broods may be any number up to six—usually three or four, with four to six young in a brood. The numbers vary considerably, but it would appear that a pair of Sparrows would raise from 12 to 15 young each season. Breeding is continuous from August to February in the warm parts of the State. They breed in and about buildings, and in trees close at hand. . . . It is difficult to give any idea as to what the bird will breed up to if left alone for another five years. Let us assume that with us each breeding pair raises 16 young in a year, and that these are half males and half females; this is, perhaps, understating the case, but will sufficiently answer our purpose. There would be at the end of five years, as the result of a single pair, if all the progeny lived, over 64,000 breeding pairs. There are, however, losses from natural causes, which reduce the numbers very much, and which make any calculations purely speculative." Mr. Musson concludes that the Sparrow has come to stay; that the damage it does far outweighs the good, probably as 8 to 2; that it has become a menace to the agricultural industry and fruit-growers, and should be promptly checked; that this can only be accomplished by organized, united, and persistent effort, renewed each year, on the part of the individual. Two main lines of work are recommended—to "prevent them breeding," and to "reduce them in number by poisoning and shooting." It is suggested that it

should be the duty of Inspectors of Nuisances, the police, and other officers to see that Sparrows are not allowed to breed about premises ; municipalities should have power to prosecute ; householders and persons in charge of buildings should be compelled to take reasonable steps to prevent Sparrows nesting and rearing their young ; agricultural, pastoral, and horticultural societies receiving grants from the Government should be required to spend a certain sum annually in fighting the pest, by offering prizes for eggs or heads, or organizing their members for the purpose of dealing with it in other ways. A " Bird Day " in schools is recommended, and the opinion is expressed that " much can be done by encouraging ' the boy ' to a life-long Sparrow war." When dealing with the birds in the breeding season it is advised to " let the birds hatch the eggs and feed the young for a week, then destroy the young before they can fly." Poisoning operations can be most successfully carried out in August. In the hope of the ultimate establishment of a fresh " balance of nature " through the agency of our native birds of prey, Mr. Musson would protect the smaller Hawks and the Butcher-Birds, as well as the Owls and Crow. It is pointed out, however, that we cannot afford to idly wait for this desirable remedy, as " it takes time for them to become accustomed to a new article of food." The same reason, it is to be feared, may delay the adoption of the recommendation that we should use the Sparrow as food. While extermination may be impossible, it is obvious that if the recommendations of the report be carried out, the result must be a sensible check to the spread of this feathered larrikin, to the advantage not only of the farmer and fruit-grower, but also of some of our native birds. Appended to the report is a diagram map showing the wide distribution of the Sparrow in New South Wales.

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### Correspondence.

THE WHITE-EYE *v.* ORCHARDIST.

*To the Editors of " The Emu."*

SIRS,—I was very pleased to read in the last issue of *The Emu*\* that able article by Mr. A. H. Chisholm in defence of the little *Zosterops*. I agree entirely with that gentleman when he says that these little birds do more good than harm, and not only this species, but many more of our native birds which are supposed to be harmful. And I may go further in saying that I do not believe there is a single species of our native birds that can be qualified as a pest. The reason of my writing in this strain is that it annoys one much to see articles setting forth trifling mischief that some of our birds may do ; and, worse still, these articles are written by ornithologists, who must

\* Vol. viii., p. 35.

know that every hand is against our defenceless birds; and then these ornithologists, if they wish to detail the habits of certain birds, should state their good traits first. It has been my experience to observe that when any of our birds do a little mischief it is invariably owing to man having destroyed the trees and shrubs, &c., which produced their native food, and, these trees having disappeared, they are compelled to eat something to sustain life, and I am very willing that these little friends, be they native birds (not imported pests), should take toll in the shape of some fruit, owing to their native feeding grounds having been destroyed in order to raise an orchard or garden. Great numbers of *Zosterops cerulescens* visit my garden in the autumn, and I am delighted to see these birds enjoy themselves on the big Turkey-fig or olive trees—the fruit of both these trees they love so much. I have often sat for an hour and listened to their pretty little warblings and chirpings as they hopped about in the shady trees, or on the ground (after the fallen fruit), in great numbers, and I do not begrudge the food they eat, while other land-owners shoot these little birds in numbers when they are attracted for miles around by the fruit on some old olive or fig tree, which fruit is next to worthless, the birds becoming an easy prey to the gun of the miserable fellow who lies in wait for them, while our real pests, such as the Sparrow and Starling (introduced birds) escape because they are too cunning to come within shot. Last season Lorikeets\* visited the Adelaide plains in unusual numbers, perhaps due to the big bush-fires in the ranges, and most likely these beautiful birds have been in the habit for ages of visiting these plains for food when their supply in the hills gave out; but now, poor things! they find man has completely destroyed their forest feeding grounds, and, not satisfied with this destruction he shoots the birds on sight. Large numbers of these birds visited my garden, and showed a great liking for pears, and on several mornings just as the sun rose and shed its bright rays on the pear-trees, literally covered in these gorgeous birds, screaming and chattering as they made their morning meal, they presented a sight that I will not easily forget. But what was my sorrow a few days later to find my friends had visited a neighbour's garden, and soon a gun was brought to bear on them, and they paid with their lives; and so it goes on. Man takes up a piece of country in the centre of a virgin forest, clears it, and plants an orchard. When the trees begin to bear of course they are an attraction or bait for miles around to the unsuspecting birds, and they are destroyed one after another till the country far and near is drained of our native birds, and soon they will be exterminated.—I am, &c.,

Fulham, S.A., 5/9/08.

S. A. WHITE.

\* *Trichoglossus novie-hollandie*.

## Australasian Ornithologists' Union.

## EIGHTH (MELBOURNE) SESSION.

ON Wednesday, 18th, and Thursday, 19th November, 1908, the official delegates appointed by the Governments of the States of the Commonwealth to attend the session, and visiting members of the Union, arrived in Melbourne, and were met by some of the Victorian ornithologists. At 4 p.m. on the afternoon of the 19th the official delegates met at the Board Room, Department of Public Works, Treasury Gardens, Melbourne, and were welcomed on behalf of the Government of Victoria by the Hon. D. E. M'Bryde, Minister of Public Works and Administrator of *Fisheries and Game Acts* of Victoria.

The following were the delegates, namely:—Victoria—Mr. C. W. Maclean, Chief Inspector of Fisheries and Game, Victoria (elected chairman); Western Australia—The Right Hon. Sir John Forrest, K.C.M.G.; South Australia—Mr. J. W. Mellor; Queensland—Mr. E. W. Archer, M.H.R.; Tasmania—Mr. A. L. Butler; whilst the Union was represented by Messrs. A. J. Campbell, Col. Mem. B.O.U., D. Le Souëf, C.M.Z.S., and A. H. E. Mattingley, C.M.Z.S.

In the evening, at the Athenæum Hall, a public lecture, entitled "The Birds of Riverina," was given by Mr. A. H. E. Mattingley, C.M.Z.S. His Excellency Sir Thomas Gibson-Carmichael, K.C.M.G., Governor of Victoria (who was accompanied by Lady Gibson-Carmichael), presided. There was a good attendance. A magnificent series of 130 slides of the birds of this fertile area was exhibited. The lecturer, who had a wealth of information at his command regarding the life-histories of the birds of this part of the Commonwealth, which is situated in New South Wales, dealt with his subject in a popular manner. He showed that birds were Nature's insecticide, and that the work performed by birds was annually worth many millions of pounds sterling to the Commonwealth. They were indissolubly linked with our domestic economy, to such an extent that the time was not far distant when it would be incumbent on the Commonwealth Government to establish an Ornithologists' Bureau similar to that established by the Government of the United States of America. His Excellency, in thanking the lecturer, stated how valuable such a lecture was in educating the people, and he was convinced that all that had been said regarding the value of birds in keeping Nature's balance level was true. One was apt to overlook the usefulness of our feathered friends, but nature study was gradually educating the rising generation as to the proper position of birds with regard to mankind, and their relative value to the community. Much praise was due to the lecturer and his society for carrying on such useful work in such an unselfish and unostentatious manner. Sir John Forrest moved a vote of thanks to His Excellency for presiding, and stated that the excellent views shown that evening, especially of the Black Swan,

reminded him of a visit that was paid to Western Australia some years ago by Mr. A. J. Campbell, who, upon observing that there were no Black Swan on the Swan River, suggested that some should be obtained and placed thereon. This was done, and now the Swan River was the pride of Western Australians, and many thousands of people enjoyed the pleasure of watching these graceful birds swimming and flying about the river.

On Friday, the 20th, the official delegates again attended at the Board Room, and proceeded with the discussion of the articles of an improved Game Bill, designed to regulate the inter-State traffic in game, which had been submitted by the Council of the Union.

*Business.*—At 7.30 p.m. the annual general business meeting of the session was held in the Royal Geographical Society's Rooms, 421 Collins-street, the president, Mr. D. Le Souëf, C.M.Z.S., being in the chair.

The minutes of the seventh annual session, held in Sydney, were read, confirmed, and signed, on the motion of Capt. S. A. White, seconded by Mr. J. W. Mellor.

The annual report of the hon. secretary was then given *extempore*, since, owing to stress of work, he had been unable to write it. It was shown that the Union's affairs were in a flourishing condition generally. The past year had been a momentous one in the Union's history. Much had been accomplished in advancing ornithological matters. A "Handlist to the Birds of Australasia" had been published as a supplement to *The Emu*. Ornithologists representing the Commonwealth had joined together in a deputation to the Prime Minister regarding the provisions of a Plumage Bill to be introduced into our Federal Legislature; whilst the Council of the Union had been engaged on the articles to be submitted to the Government delegates at this session.

The president, Mr. Le Souëf, stated few knew of the enormous amount of labour that had devolved upon the hon. secretary during the past twelve months.

The hon. treasurer's report and balance-sheet followed, read by Mr. Z. Gray in the absence of the hon. treasurer. The financial statement showed that the Union was financially in a prosperous condition. Mr. Z. Gray moved its adoption, which was seconded by Mr. A. L. Butler, and carried.

*Correspondence.*—Several letters on bird protection were read, as well as letters of apology from members for their unavoidable absence.

*Presidential Address.*—A paper, entitled "The Most Useful Bird in Australia," was given by Mr. D. Le Souëf, C.M.Z.S., as his presidential address. The president was strongly of opinion that the Ibis was the best bird found in the Commonwealth. It held the premier position owing to the sum standing to its credit in the Bank of Nature. Messrs. E. B. Nicholls, Chas. Barrett, and F. R. Godfrey supported the address.

*New Members.*—On the motion of Capt. S. A. White, seconded by Mr. J. W. Mellor, the following new members were elected:—



New South Wales—S. W. Jackson, H. Keene, H. Burrell, Mrs. H. Burrell, J. Brennan. Tasmania—H. Baker, R. Archer, H. L. Pottenger, A. W. Swindells. South Australia—P. T. Sandland, J. W. Hosking. Queensland—W. J. Harvey. Victoria—C. W. Wilson, Scott Morrison, O. W. Rosenhain, I. Batey, E. J. Christian, A. P. Ingle, C. L. Cameron, E. R. Grimwade, G. M. Robertson, J. M. Thomson, A. H. Chisholm, H. H. Peck, G. E. Aldridge. New Zealand—G. R. Marriner, F.R.M.S. America—Chas. S. Thompson, A.B., A.M.

*Election of Office-bearers.*—Dr. H. Bryant moved, and Surgeon-General Williams seconded the motion, that the following office-bearers be elected for the ensuing year:—President, D. Le Souëf, C.M.Z.S., &c.; vice-presidents—J. W. Mellor, A. J. Campbell, Col. Mem. B.O.U.; hon. treasurer, J. A. Ross; hon. editors, A. J. Campbell, Col. Mem. B.O.U., Scott Morrison; hon. secretary, E. B. Nicholls;\* hon. librarian, A. H. E. Mattingley, C.M.Z.S.; hon. press correspondent, C. L. Barrett; members of Council—L. Harrison (New South Wales), A. L. Butler (Tasmania), E. Stead (New Zealand), W. M'Ilwraith (Queensland); B. H. Woodward, F.G.S. (Western Australia), Col. C. S. Ryan (Victoria). Adopted.

*Papers.*—Mr. A. G. Campbell contributed a monograph of much interest to ornithologists on "The Flame-breasted Robin (*Petræca phænicea*)"; Mr. L. C. Cook dealt with the habits of the Victoria Lyre-Bird (*Menura victoriæ*); whilst Mr. E. B. Nicholls contributed a paper on "The Proper Choice of a Vernacular Name."

*Next Annual Session.*—It was unanimously decided, on the motion of Mr. A. L. Butler, seconded by Captain S. A. White, to leave the choice of South or Western Australia, as the next State for the annual session, in the hands of the Council.

*General Business.*—Mr. E. B. Nicholls moved, and Mr. A. H. E. Mattingley seconded, the following motion:—"That, in view of the fact that for the first time in Australian history delegates nominated by the Governments of the several States are present to discuss a comprehensive Bird Protection Bill, and to bring about unification of the Game Laws for the whole of the Commonwealth, and inasmuch as other matters dealing with the value of our bird-life as a national asset from a purely economic standpoint will be discussed, the Government be approached with the object of ascertaining if it would print, for the Union and the delegates conferring, the transactions, which will be of value to the whole of Australia." The motion was adopted.

*Exhibits.*—By Mr. F. R. Godfrey.—A copy of the original chart of insectivorous birds of Victoria, prepared for use in State schools.

By Mr. C. W. Maclean.—A rough skin of apparently a hybrid between a Lyre-Bird and an Andalusian fowl.

By Mr. H. L. White.—A small collection of skins from North-West Australia, including—*Eremiornis carteri*, *Mirafra secunda*, *Emblema picta*, *Ptilotis heartlandi*, and a new Pardalote. Mr. White

\* Mr. G. F. Hill was subsequently appointed.

## STATEMENT OF RECEIPTS

For Year ending

| £     | s. | d. | £  | s. | d. | RECEIPTS.                                       |
|-------|----|----|----|----|----|-------------------------------------------------|
|       |    |    | 28 | 0  | 9  | Balance brought forward—General Fund            |
|       |    |    | 14 | 15 | 6  | Col. Figure Fund                                |
| 42    | 16 | 3  | 46 | 7  | 0  | Subscriptions—Arrears                           |
|       |    |    | 80 | 9  | 2  | Year ending 30th June, 1908                     |
|       |    |    | 12 | 0  | 0  | „ 1909                                          |
| 138   | 16 | 2  |    |    |    | “Handlist”—Supplement to part 3, vol. vii.      |
| 12    | 3  | 3  |    |    |    | Sales of <i>The Emu</i> (including 6d. postage) |
| 11    | 7  | 0  |    |    |    | Partial payments in advance                     |
| 0     | 6  | 6  | 5  | 11 | 10 | Col. Figure Fund—Donations                      |
|       |    |    | 3  | 0  | 0  | Advertising in <i>The Emu</i>                   |
| 8     | 11 | 10 |    |    |    | Exchange                                        |
| 0     | 19 | 0  |    |    |    |                                                 |
| <hr/> |    |    |    |    |    |                                                 |
| 215   | 0  | 0  |    |    |    |                                                 |

(Signed) J. A. ROSS, *Hon. Treasurer.*

4th November, 1908.

## BALANCE

Year ending

| £   | s. | d. | £  | s. | d. | ASSETS.                                                                                                                 |
|-----|----|----|----|----|----|-------------------------------------------------------------------------------------------------------------------------|
| 180 | 0  | 0  |    |    |    | The <i>Emu</i> in Stock (exclusive of Supplement to part 2, vol. v.)—1,615 parts at 2s., and 148 “Handlists” at 2s. 6d. |
| 15  | 0  | 0  |    |    |    | Library (estimate)                                                                                                      |
| 6   | 10 | 0  |    |    |    | Illustration Blocks                                                                                                     |
| 15  | 0  | 0  |    |    |    | Arrears of Subscriptions (estimated good)                                                                               |
|     |    |    | 18 | 7  | 5  | Cash in Bank—General Fund                                                                                               |
|     |    |    | 23 | 7  | 4  | Coloured Figure Fund                                                                                                    |
| 41  | 14 | 9  |    |    |    |                                                                                                                         |
| 258 | 4  | 9  |    |    |    |                                                                                                                         |

AND EXPENDITURE

30th June, 1908.

| EXPENDITURE.                                              |  | £     | s. | d. | £     | s. | d. |
|-----------------------------------------------------------|--|-------|----|----|-------|----|----|
| <i>The Emu</i> —Printing, &c., including Supplement .. .. |  | 132   | 19 | 6  |       |    |    |
| Illustration Blocks and Prints ..                         |  | 8     | 8  | 10 |       |    |    |
|                                                           |  | <hr/> |    |    | 141   | 8  | 4  |
| Registration of <i>The Emu</i> .. ..                      |  |       |    |    | 0     | 3  | 0  |
| Binding <i>The Emu</i> .. ..                              |  |       |    |    | 0     | 17 | 6  |
| Purchase of <i>The Emu</i> (for sale at same price) ..    |  |       |    |    | 1     | 14 | 6  |
| Presentation to Proof Reader of <i>The Emu</i> ..         |  |       |    |    | 2     | 10 | 0  |
| Congress .. ..                                            |  |       |    |    | 1     | 9  | 0  |
| Stationery and General Printing .. ..                     |  |       |    |    | 4     | 13 | 0  |
| Photographs of Egrets for Advertising .. ..               |  |       |    |    | 0     | 6  | 6  |
| Postage and Duty .. ..                                    |  |       |    |    | 17    | 5  | 0  |
| Exchange .. ..                                            |  |       |    |    | 1     | 15 | 6  |
| Book—"The Kea" (Library) .. ..                            |  |       |    |    | 0     | 7  | 6  |
| Fire Insurance .. ..                                      |  |       |    |    | 0     | 5  | 5  |
| Bank Charges .. ..                                        |  |       |    |    | 0     | 10 | 0  |
| Balance in Bank—General Fund .. ..                        |  | 18    | 7  | 5  |       |    |    |
| Coloured Figure Fund .. ..                                |  | 23    | 7  | 4  |       |    |    |
|                                                           |  | <hr/> |    |    | 41    | 14 | 9  |
|                                                           |  |       |    |    | <hr/> |    |    |
|                                                           |  |       |    |    | £215  | 0  | 0  |
|                                                           |  |       |    |    | <hr/> |    |    |

*Audited and found correct.*

Z. GRAY,  
JAS. HEDDING, } *Hon. Auditors.*

6th November, 1908.

SHEET,

30th June, 1908.

| LIABILITIES.                        |  | £   | s. | d. |
|-------------------------------------|--|-----|----|----|
| Subscriptions paid in advance .. .. |  | 12  | 0  | 0  |
| Other payments in advance .. ..     |  | 0   | 6  | 6  |
| Balance .. ..                       |  | 245 | 18 | 3  |

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£258 4 9

also exhibited series of eggs of *Strepera graculina* and *Gymnorhina longirostris*, the latter being new.

(For further remarks on these exhibits see "Annotations," p. 142, this issue.)

On Saturday, 21st, the official delegates met at 10 a.m. in the Board Room, Public Works Department, and concluded their labours.

In the afternoon members visited "Graylings," the residence of Mr. F. R. Godfrey, St. Kilda, and passed a pleasant afternoon viewing the collection of birds and other specimens that Mr. Godfrey and his wife had collected and mounted.

On Sunday, 22nd, at 11 a.m., a trip was made by rail to the National Park, Ferntree Gully, about 24 miles out from Melbourne. A large number of members attended. The day was beautiful, and the picturesque scenery, composed of tall timber, scrub, tree ferns, and flowering shrubs, was greatly admired, while the cadence of myriads of *Cicadæ* filled the air with sound. A deserted nest of the Pilot-Bird (*Pycnoptilus floccosus*) was shown to the visitors, who marvelled how such a securely-hidden home could be found. Other nests were also pointed out, notably those of the Leaden Flycatcher (*Myiagra rubecula*) and Laughing Jackass (*Dacelo gigas*). Whilst some enjoyed the cooler glades of the forest, others roamed over the open, park-like country adjacent, where the nests of the Orange-winged Sittella (*S. chrysoptera*), Black-faced Cuckoo-Shrike (*Graucalus melanops*), Scarlet-breasted Robin (*P. leggii*), Mud-Lark (*Grallina picata*), and many other varieties were seen. Dinner and tea were partaken of at "Vogel Sang," and served up *al fresco*, amidst enchanting scenery. After a most enjoyable outing, the party returned in the evening to the metropolis.

Monday, 23rd.—In the morning the Zoological Gardens and in the afternoon the National Museum were visited. In the evening a dinner was given to the official delegates by the Bird Observers' Club, at the Mia-Mia, Collins-street. There was a large attendance, presided over by Mr. Donald Macdonald, editor of "Nature Notes" in *The Argus*. The toast list included "The King," "The A.O.U.," "The Inter-State Delegates," "The Expedition," "The Birds," and "The B.O.C." Many interesting ornithological exhibits graced the tables.

On Tuesday, 24th, at 8.10 a.m., some members, in charge of Mr. A. J. Campbell, left for a camp-out excursion for a week at Phillip Island to study the Mutton-Birds (*Puffinus tenuirostris*).

At midnight the s.s. *Manawatu* left Queen's Wharf with 25 members and friends on an expedition to Bass Strait islands, details of which will appear in a subsequent issue of *The Emu*, together with the report of the Phillip Island camp-out and the proceedings of the Inter-State Conference for the Better Protection of Birds.

## President's Address : The Most Useful Bird in Australia.

It is a little difficult to state dogmatically which is our most useful bird, but we can probably get somewhere near it, as the bird that should hold the premier place should be the one that does most good to the country in which it is found, and the least harm, both as to the amount of food it consumes and also as to its numbers. For instance, a bird may be very useful and yet scarce, consequently the total amount of insects it consumes is small, and even then many of those insects may not be injurious to man in any way. Birds that take fruit, even though it may only be for one month or less in the year, are held in disfavour by fruit-growers, although for the other eleven months they are devouring more or less destructive insects, and possibly without their aid it would be much more difficult to grow that fruit in the first instance or rear the young trees.

I consider the Straw-necked Ibis is by far our most useful bird, both as to its numbers, the amount of food it devours, and not being antagonistic to human interests. They are found more or less over the whole of Australia; their principal food consists of caterpillars, grasshoppers, fresh-water snails (which are often the host of the liver fluke), centipedes, scorpions, beetles, and yabbies. The amount consumed by each bird is very considerable, as from some I actually counted there were 2,410 young grasshoppers, 5 fresh-water snails, and several caterpillars, weighing  $4\frac{1}{2}$  ozs. That will give a little idea as to their immense utility.

In Queensland they are to be found in the sugar-cane fields, both devouring the grubs as they are turned up by the plough and also continually poking their long beaks about in likely hiding-places for beetles, which are so destructive to the sugar-cane. They also go in flocks, often of considerable size, and work over the ground together, and any young snakes they find up to about 6 inches in length are snapped up directly, and they probably help to keep these reptiles down more than any other bird, from their habit of turning over bits of bark or leaves to see what is underneath, and so discovering the hiding-place of any small reptile.

This bird is also held in high esteem in other countries. Take, for instance, Egypt. The ancient inhabitants of that country had a dreaded enemy in the locust, and the bird that helped them more than any other by devouring millions of these destructive insects was the Ibis, and it shows in what high esteem it was held by the Egyptians, when they regarded it as sacred, and frequently embalmed it after death.

Another bird which also destroys hosts of noxious insects is the Bustard or Plain-Turkey, but unfortunately they are very much sought after as an article of food, and are consequently getting more rare every year; therefore the total amount of good they do does not compare with that done by the Ibis.

The Pied Grallina or Magpie-Lark is another bird which lives

entirely on insects. It is fairly plentiful all over Australia, being usually found in the neighbourhood of water; but the class of insects it preys on is not so destructive to human interests as those the Ibis feeds on. For all that, it is a bird that should be rigorously protected. There is a large class of smaller birds, such as Fly-catchers and others, that are good insect-destroyers and very helpful to farmers and fruit-growers, but they are too numerous to go through in detail now. Our friend the Laughing Jackass or Giant Kingfisher is held in high esteem by many, mostly because he kills a few snakes, but he is much addicted to eating eggs and young of far better insectivorous birds than himself, and also devours many lizards, which reptiles are splendid insect-destroyers, especially useful in catching moths, consequently this bird does not hold a high place in the list of those that are useful to mankind. Magpies, Butcher-Birds, Crows, and similar birds all have their good points, but they also have their bad ones. The Ibis has none, and I think easily holds the premier place as being the most useful bird, not only in Australia but also in the other countries where it is found. These birds should be rigorously protected, especially in preventing their nesting rookeries, where thousands of birds often congregate together, from being raided for the sake of their eggs, and a heavy penalty should be enacted for taking either the birds, their eggs, or young.

### Notes and Notices.

A HIGH AIM.—Before his cousin, Mr. Gregory M. Mathews, F.L.S., &c., completes his great work "The Coloured Figures of the Birds of Australia," Mr. H. L. White, Scone, New South Wales, hopes to possess for reference the eggs of every known Australian bird. Mr. White's oological collection now exceeds 700 species, chiefly through his enterprise in sending out competent collectors last season both to North-East and North-West Australia.

COLOURED FIGURE FUND.—The hon. treasurer A.O.U. reports that the donations to the Coloured Figure Fund for the year ending 30th June last were as follow:—W. J. T. Armstrong, 3s.; F. L. Berney, 10s.; Miss Brumby, 10s.; H. Burrell, 8s.; A. L. Butler, 2s. 6d.; G. Graham, 5s.; J. Greenway, 5s.; R. C. McGregor, 1s. 10d.; Thos. Tindale, 5s.; H. L. White, £3 1s. 6d.; and for the previous year the following should be acknowledged, namely:—W. V. Angove, 5s.; Miss Brumby, 5s.; G. Graham, 5s.; T. Iredale, 10s.; Colonel Legge, 10s.; Thos. Tindale, 5s.

EXTRACTS FROM LETTERS OF MR. F. L. WHITLOCK TO MR. H. L. WHITE (*written during September, 1908, from near Marble Bar, Western Australia*).—Stones and spinifex! spinifex and stones! ranges of hills red with granite and glare, or else huge barren flats, with nothing but spinifex, creeks lined with stunted and prickly shrubs; the only relief,

the line of gum-trees along the rivers and larger creeks, which in seasons like the present actually present the spectacle of bright, clear, running water! I cannot describe to you in adequate terms the roughness of some of these rocky creeks, where one must look before making a step, and where one is nearly driven mad by the tormenting swarms of bush flies, the sweltering heat and want of water. At the "Cajaputs" I found a nest of *Ptilotis carteri* with three eggs, one of which differs from the others. Without wishing to raise hopes that may not be realized, it will be well worth while to submit the odd egg to a Cuckoo expert for critical examination. I took one undoubted Cuckoo's egg in the nest of the White-vented Wood-Swallow (*Artamus venustus*). West of "Cajaput" camp lies a huge spinifex flat, with a big timbered creek running nearly parallel to the Coongan River. I had several Hawks' nests under observation along that creek. The first was a nest of the Little Eagle (*Nisaetus morphnoides*), at the top of a big, spreading gum-tree. The nest was about 55 feet above the bed of the creek and on rather a thin limb. However, the morning was calm, and I determined to try to scoop the eggs from the nest. With the aid of a fallen dead limb, and by cutting steps with a tomahawk, I reached the first branch, when down fell the scoop. I would not climb down that thick trunk again, so up I went, minus the scoop, until I could see right into the nest, which was on a horizontal limb of not too thick dimensions. I was determined to have those two eggs, so worked my way cautiously along the limb until the critical moment came. I had to let go with both hands and lean forward to grab the eggs. Fortunately the day was calm, and I got both eggs and myself safely down the tree. They are a perfect clutch, almost unspotted, and more pointed than the Irwin River specimens I sent you. The nest was about 2 feet in diameter, with a fairly deep cavity, lined with green eucalyptus leaves. I had a very satisfactory view of the parent birds, and their identity is beyond question. My next nest was that of the Striped Brown Hawk (*Hieracidea berigora*). Both parent birds were in a neighbouring tree, and allowed of a minute examination, so I did not shoot them. The nest contained two typical eggs. It was a hot day, and after these two climbs I was dry, so determined to make for a neighbouring pool of water. It was not long before I heard the curious notes of the Fawn-breasted Kingfisher (*Dacelo cervina*), so gave every likely-looking tree an inquiring thump with the back of my tomahawk. The result was unexpected, for in a very small side creek, with a few stunted gums growing in it, a hollow tree gave forth not only a Marbled Owl (*Ninox ocellata*), but also a Western Kestrel (*Cerchneis unicolor*). What with the heat, thirst, and two heavy climbs, I was too tired to do anything at the moment. I returned very early next morning, and after my inquiring knocks out popped the same birds

as before. I tomahawked my way up. The tree was very hollow and shaky, though still alive. On looking down the spout from which the Owl had flown I could just discern the three eggs; I chopped a hole accordingly, and secured them safely—a fine, perfect clutch. Then for the Kestrel. The end of the hollow limb from which the sitting bird had flown was dead; I broke this away and could then see the four beautiful eggs. I brought all down safely. My next objective point was Limestone Creek, another tributary of the Coongan River. *En route* I found my first nest of the Red Plumed-Pigeon (*Lophophaps ferruginea*); this was about 10 chains from the creek, on “white ground,” and where the spinifex was very short and sparse. I put the sitting bird off the nest, which was quite unconcealed and merely a little hollow lined with dry particles of spinifex. The two eggs are cream-coloured and elliptical in shape. *Re Astur cinereus*, it occurred to me to visit the old nest again, as in England the Sparrow-Hawk will lay again in the same nest after being robbed. I was not disappointed: the old bird was on, so up the tree I went and found two more lovely eggs; they could hardly be better marked. I knew the Chestnut-eared Finch (*Taniopygia castanotis*) was breeding in the same tree—one nest was attached to the foundation of the Hawk’s nest, and contained one egg; but a surprise was in store. In a hollow spout was a second nest, and a blackboy who climbed the tree for me reported “Plenty egg in there,” at the same time throwing one out. I told him to come down, when, peeping in myself, I found no less than nineteen (19) eggs. I secured them as a curiosity. I have secured two more fine clutches of the Long-billed Magpie (*Gymnorhina longirostris*). Doves.—Several more perfect clutches of the Little Dove (*Geopelia cuneata*) and one clutch of the Barred-shouldered Dove (*Geopelia humeralis*). Owls.—History repeats itself. In hunting for a nest of *Dacelo cervina* I flushed another female of *Ninox ocellata* off her three eggs; these were heavily incubated. *Artamus*.—I have several beautiful clutches of *A. venustus*. With regard to the Little Wood-Swallow (*A. minor*), this species haunts the rockiest gullies in the whole district, and unless there are cliffs it does not occur. Of the nests in prospect, one is in an old nest of the Fairy Martin (*Petrochelidon ariel*); another in a very narrow cleft of rock—I can just get my hand in edgeways; another is in the hollow spout of a small gum-tree, and the fourth in a cleft of rock again. Parrots and Cockatoos.—No luck yet. Of the Rufous Bush-Lark (*Mirafra woodwardi*) I found a nest, but, alas! it contained two well-grown young ones. *Cisticola*.—This is a very cunning bird. I have a pair under observation, and still hope to get eggs, as it may be a new species. No signs of Carter Desert-Bird (*Eremiornis carteri*) yet, but the flat where I think this species might occur is of such vast extent that I may yet find the birds.



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THE objects of the Society are the advancement and popularization of the Science of Ornithology, the protection of useful and ornamental avifauna, and the publication of a magazine called *The Emu*.

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A Quarterly Magazine to popularize the Study and Protection of Native Birds.

OFFICIAL ORGAN OF THE AUSTRALASIAN ORNITHOLOGISTS' UNION.



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(The author of each article is responsible for the facts recorded therein, and any deductions he may draw.)

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Articles (technical papers should if possible be type-written) and communications intended for publication, also books and publications for notice, should be addressed to the Editors, *The Emu*, c/o MR. A. J. CAMPBELL, Custom-House, Melbourne.

MSS. of general articles should reach the editors at least six weeks prior to the issue of the number for which they are intended.

Occasionally, when funds permit, it is intended to issue Coloured Plates of hitherto unfigured Australian Birds. Voluntary subscriptions to a "COLOURED FIGURE FUND" are courteously invited from members.

The price of *The Emu* to non-members is 4/- per copy. Extra copies may be had by members at half-price.

# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. VIII.]

1ST APRIL, 1909.

[PART 4.

## Notes on Birds Observed on the Pilbarra Goldfield, North-Western Australia.

BY F. LAWSON WHITLOCK.

I LANDED in Port Hedland on the 5th May, 1908. My destination was Marble Bar, where I was to join an old friend, and together we were to try our luck once more at prospecting, or other work if deemed more expedient.

In order to see more of the country, and always with an eye to the bird-life, I elected to travel up with a camel train in preference to the more rapid, but to me uncomfortable, mail coach.

Port Hedland, with its network of creeks, backwaters, swamps, and mangroves, appeared a land of promise, but I had no time for more than a few walks along the open beach at low tide, where Curlews, Sandpipers, and Plovers were in small parties or flocks. They were rather wild, but I identified *Limonites ruficollis*, *Tringoides hypoleucus*, *Tringa acuminata*, and shot a Sandpiper I did not recognize. This I sent to the Perth Museum. I was inclined to refer it to a *Heteractitis*. In the mangroves I could hear a *Zosterops*, and I recognized several pairs of *Artamus leucogaster*. I had, in addition, glimpses of Herons and large *Falconidae*. There was also a sprinkling of Gulls and Terns flying over the main creek.

Camel-drivers are notorious for starting at a late hour, and Afghan camel-drivers especially so. At sunset on our first day of travel we were but little more than 5 miles from Port Hedland, and not clear of the mangroves and mud-flats. During the night I heard the cry of the "Wēē-lo" (*Burhinus*), and in the early morning the call of the Curlew (*Numenius*), and I found myself at sunrise an object of considerable interest to a semicircle of inquisitive Ravens. In an adjacent mangrove thicket I could again hear a *Zosterops*, which I had little doubt was *Z. lutea*.

We made better progress next day, and reached the first hills at Poondina. These are conspicuous objects, even for miles out at sea, as I subsequently discovered. They consist of huge

isolated and conical formations of hæmatite. At the foot of the nearest hill we camped. There was a small creek there, and water was easily obtained by digging in the sand. Along the creek were a few gums and a little scrub. Here I first met with *Ptilotis carteri*, *Geopelia cuneata*, *Grallina picata*, *Rhipidura tricolor*, and one or two others. Next morning the Ravens were around as usual, and as soon as the drivers were away seeking the camels they got into mischief, and I had to leave my ornithologizing to go and drive them from the bags of flour, which they were busily picking holes into to get at the contents. Resuming our journey, the country became very rocky and arid—red, water-worn, granitic hills, with little or no vegetation except at the creeks, and reminding one of the peninsula of Sinai when viewed from a steamer in the Red Sea. Later on things improved a little, the granite hills giving way to a sandy plateau of vast extent, and intersected at regular intervals by deep creeks, more or less timbered. At the creeks where pools or soaks were to be found there was *Ptilotis carteri*, as full of vivacity and song as in its most favourite haunts. On the plains were a few *Artamus venustus*, and an occasional *Malurus leucopterus* or *Anthus australis*; and, when not too far away from water, a small flock of *Tæniopygia castanotis* sometimes flitted by.

At the Strelley River crossing was a large permanent pool, and here, in addition to the previously mentioned species, I noticed *Nisäctus morphnoides*, *Hieracidea*, *Cerchneis*, *Dacelo cervina*, *Ægialitis melanops*, and other of the *Limicolæ* not recognized. It was here, too, that I made acquaintance with the curious Partridge-Pigeon (*Lophophaps ferruginea*). I shot a pair as they stood sentinel-like on the top of a convenient block of granite. Just before leaving this camp I detected amongst the numerous *Ptilotis carteri* a stranger to me, and after some difficulty I shot it. It was a *Ptilotis*, somewhat resembling *P. cratitia*. I subsequently learnt it was *P. keartlandi*.

At Depôt Creek I secured my first *Melithreptus latior*, and an example of *Chalcococcyx basalis*. But though things were improving it was not until the Shaw River was reached that bird-life became really plentiful. Here I first encountered *Clinacteris melanura*, *Pomatorhinus rubeculus* (four or five old nests of the latter being noticeable in a young gum-tree), *Barnardius zonarius*,\* numerous *Petrochelidon nigricans*, and other common birds.

Gorge Creek was the next most interesting camp. Here I first encountered *Artamus minor*, *Graucalus melanops*, and the lovely little Painted Finch (*Emblema picta*).

At the Coongan crossing, some 20 miles ahead, the latter river was very wide, the track almost touching the mouth of the Talga, itself over a quarter of a mile wide at its junction with

\* ? *B. occidentalis*.—EDS.

the Coongan. Here the Parrot family was much in evidence. *Barnardius occidentalis*, *Melopsittacus undulatus*, *Cacatua gymnopsis*, and *Calopsittacus novæ-hollandiæ* were not uncommon. Prior to our arrival here I found my first nest, though it was totally out of season. I, with a companion, had struck across a big spinifex flat to a bush hotel visible some miles away, as we were running short of several necessaries. I had the good luck to flush a female *Emblema picta* from her nest in a huge clump of "buck" spinifex. It contained a clutch of perfectly fresh eggs.

On leaving the Coongan camp we soon entered the hilly country proper. At Doolina Gorge the cliffs were very precipitous, and, as I found later on, were a favourite haunt of *Artamus minor* and other rock-loving species. At our next camp I secured another specimen of the puzzling *Ptilotis*, and observed *Emblema picta* collecting vegetable down for nest-building. It seems probable that nests of this species may be looked for at almost any period of the year, provided water is obtainable.

I was now within easy reach of my destination, and two days later arrived there, joining my friend at his camp, some 4 miles from the township, the following day.

The country around Marble Bar may be roughly described as a series of precipitous and rocky ranges, much intersected by deep, stony creeks, for the most part with only a scant growth of scrub, and more rarely timbered with dwarf gums and casuarinas in addition. But to the south and south-east of the township a vast spinifex flat extends almost as far as the eye can reach. This is intersected by one main creek, with permanent waterholes, thickets of scrub, and, where not cut down for mining timber, fair-sized eucalypts. On the flat itself are occasional gums or other trees, more or less stunted, but for all that resorted to by various species for breeding purposes. In addition, the main Coongan River, fed by innumerable side creeks and more important tributaries, flows (in rainy seasons) through a deep and rocky valley of its own. The bed of the river varies from a few yards to half a mile in width. Where it is widest there will be found the most and largest timber, whilst the innumerable bars and sand-banks are clothed with low scrub or thickets of cajaput, the whole much encumbered by *débris* brought down by floods.

When it rains in the north-west of this State it rains in earnest, and I was soon to experience a downpour of over  $3\frac{1}{2}$  inches, which fell in the course of a few hours, converting every little gully into a stream and the larger gullies into veritable mountain torrents. During the whole time of my bird-observing on the Coongan the upper reaches contained running water. The season was thus a favourable one for breeding purposes, though bird-life was, in consequence of the abundance of water,

much more scattered than in drier seasons. The value of pure running water for domestic purposes in this hot, arid region, can hardly be over-appreciated.

I now propose to give a short account of all birds met with during my trip, merely adding that I travelled down the Coongan to its confluence with the de Grey, and, following the latter down for some distance, eventually struck off to the coast at Condon, with the view of having a week or so in the mangroves at the latter locality. I will only add that the bulk of my ornithological work was accomplished in the months of August, September, and October.

WEDGE-TAILED EAGLE (*Uroaëtus audax*).—Uncommon; a pair or two seen haunting the most secluded ranges of the upper Coongan valley. Reported to be more numerous on the upper de Grey. I visited one nesting site, and found two old nests and the wreck of the female or a young bird below the more recent. The most remarkable fact about these nests is that in each case I could touch the bottom of the structure with the barrel of my gun without climbing a foot. In each case small gum-trees had been chosen, though there were plenty of larger trees up the gully.

LITTLE EAGLE (*Nisaëtus morphnoides*).—The favourite haunt of this species is near the permanent pools on the numerous rivers and creeks which are such a feature of the Pilbarra district once the hilly country is reached.

On the upper Coongan, south of Marble Bar, were several pairs, but each pair seemed to restrict its wanderings within certain limits, and I never observed more than one pair on the wing at the same time.

This Eagle, once identified, is easily recognized afterwards. Apart from its peculiar cry, the contour of the extended wings is very distinct from that of other birds of prey of the same size. The anterior margin of each wing forms a crescent. In flight, too, the primaries are separated at the tips.

The cry is a succession of seven rapidly uttered notes on an ascending scale, followed by a shrill and sustained "Pëw-ü-ü."

The birds probably pair for life, and one is seldom seen without the other. It is a wary species, and even at the nest is very difficult to approach closely.

All of the four nests discovered on the Coongan were built at a considerable height, and in each case the most massive eucalypt was chosen. The nests, too, were in every case built on a horizontal branch at some distance from the centre of the tree. The first one I robbed was at a height of 45 feet from the bed of an important tributary of the Coongan. It was a fairly large and well-constructed nest, the foundation consisting of sticks up to an inch or more in diameter. The cup, though shallow, was neatly formed, and lined with green eucalyptus leaves. It contained two fresh eggs. With the exception of trifling nest-stains, these eggs were spotless, and in colour white, with the faintest tinge of green. Whilst I was robbing the nest the parent birds perched on a dead tree some ten chains away, and made no demonstration whatever. As I had observed at a nest in another part of this State, a colony of the Tree-Martin (*Petrochelidon nigricans*) was breeding in a hollow limb of the same tree. Not a hundred yards away, in a little tributary creek, a half-dead gum-tree was standing. In this tree were nests of the Marbled Owl (*Ninox ocellata*) and the Western Kestrel (*Cerchneis unicolor*), and in the bank of the creek at the foot of the tree a female Red-browed Pardalote (*Pardalotus rubricatus*) was sitting on three eggs.



The second nest was in a more lofty situation, being quite 60 feet above the water of the main Coongan. The nest, as usual, was on a horizontal limb, and very difficult to reach. It was nearly twice as bulky as the previous nest, being the accumulation of several years. I employed a native to obtain the eggs for me. The nest contained two, much incubated. Unfortunately, he broke one in descending the tree. These eggs were both marked with pale rust-coloured blotches. The broken egg had the markings all massed at the smaller end. In ground colour these eggs were of a dirty white.

The third nest, found a week later near the junction of the Talga River with the Coongan—the latter river here being over half a mile in width—was at a height of not more than 30 feet. This was more due to the fact of the eucalypts on the Talga being small than of any variation in the habits of the parent birds. This nest contained a fine young Eaglet, which would have left the nest in a week or ten days.

The fourth nest was on the banks of the de Grey River, a few miles from where its tributary, the Coongan, effects a junction. It was in a fairly large eucalypt, and, as I was informed by the natives who found it, in a very inaccessible position, owing to its being placed near to the extremity of a horizontal branch. I had gone down the river, as I was under the impression the nest was in that direction. Instead of coming to me and telling me of the difficulty, the climber foolishly chopped off the whole limb, in the hope that when the eggs fell out his mate below would be able to catch one or the other. I need hardly add the experiment failed. Both eggs were irretrievably ruined.

The young Eaglet before referred to differed somewhat from its parents in plumage, being very rufous on the head, neck, and breast, with narrow shaft lines. Cere greenish-yellow. Tarsus feathered, and the claws very long and powerful. Pattern of the wings similar to that of the adult, but the plumage generally dead black, with faint greyish margins. The long feathers of the occiput were well developed and with black tips. Feathers of the head of a deeper brown than that of under parts.

Native name of the Little Eagle, Wee-dun-ba.

WHITE-HEADED SEA-EAGLE (*Haliastur girrenera*).—This beautiful Sea-Eagle does not appear to travel far from the coast, and my acquaintance with it is by no means extensive. The first pair I ever saw in Australia I observed at Point Sampson, near Roebourne. They were flying about the creeks in that locality. I had reason to think that it might breed in the extensive mangroves bordering the network of creeks and backwaters at Port Hedland. So when I arrived at Condon, where conditions were similar, if on a smaller scale, I naturally looked for it there. I was not disappointed. My first walk at Condon was a trip up the coast to a rocky point and a neighbouring islet, accessible at certain stages of the tides. On my way I caught the gleam of a white head and neck amongst the mangroves. A closer approach revealed the whole bird, with its richly contrasting cinnamon-coloured upper parts. Close at hand was its mate. Both birds were perched on the outer fringe of mangroves. The tide was rapidly coming in, and though I waded in up to the knees I found it useless at the moment to proceed further. However, though I subsequently made a thorough examination of this tract of mangroves, I eventually found the nest on the other side of the estuary and nearly a mile away. The actual site was quite close to the port, and in a clump of flourishing and quite massive mangroves, a little distance back from the open ocean. At low tide the nest would be about 20 feet from the sand, and at high spring tides the bottom of the nest cannot have been much above high water mark. The structure was evidently the accumulation of several years. It was quite 2 feet in height and about the same in width. There was just the semblance of a cup. The nest contained a young Eaglet about ten days

old, which boldly faced me with extended wings and open beak. It showed no fear, and attempted no resistance when I handled it. I visited the nest twice, but saw nothing of the parent birds on either occasion. Though the nest was very substantial, none of the sticks of which it was composed was thicker than my little finger. The young Eaglet was in a nondescript stage of plumage—the head and neck mostly white, but with a tinge of cinnamon on the lower throat and breast; rest of under parts whitish; back and wings mostly black, but flecked here and there with white down. Cere black. Tarsus naked and dull greenish-yellow. Iris deep brown. Beak black.

The adult birds have a peculiar appearance on the wing. The short white tail and white head and neck and the great expanse of wing make the body appear quite stunted. They were not unlike huge bats when the latter creatures are skimming along with outstretched wings.

The call note is a curiously modulated "Pē-ah-h-h," the latter syllable rather long-drawn and uttered in a tremulous manner.

I observed another fine pair in the neighbourhood of Port Hedland, but had no time to search for the nest.

GREY FALCON (*Falco hypoleucus*).—A single pair of these rare Falcons was watched at close quarters out on the plains of the lower de Grey. I found a nest from which the young had flown, but am not certain whether it was the home of this pair or that of some other Hawk.

STRIPED BROWN HAWK (*Hieracidea berigora*), native name Carral-lu.—The commonest Hawk of the Coongan district, and I again met with it on the de Grey plains. I found half a dozen nests, from which I obtained eggs. As a rule they were at a good height, but one at no greater elevation than 20 feet. Unlike the others, this nest was away from the centre of the tree, and was only reached with difficulty and some risk. An interesting fact was related to me by a kangaroo-hunter on the de Grey. He told me he had several times taken the eggs of this species (and probably the next mentioned) from cavities in the huge ant-hills which are so conspicuous on these vast plains. Three was the maximum number of eggs I found, but in several cases the female was sitting on two.

BROWN HAWK (*Hieracidea orientalis*).—Less common than *H. berigora*, but I noticed eggs in two nests. In each case an old Babbler's nest (*Pomatorhinus rubeculus*) had been adapted for the purpose.

WESTERN KESTREL (*Cerchneis unicolor*, Milligan), native name Bin-birri.—Much more common on the lower de Grey than on the Coongan. It seems to favour the plains rather than the rocky timbered gorges of the latter river. I obtained nests, however, in both districts. In all cases the eggs were laid in hollow limbs of eucalypts, at no great height from the ground. The first I took was in a dead limb, and I should have passed it by had not the tell-tale flake of down at the mouth of a remarkably small nest-hole arrested my attention. As it was, I climbed the tree, half expecting to find the nest of *Barnardius occidentalis*, for which I was then searching.

On the lower Coongan I obtained the remarkable number of eight eggs from one nest. They were obviously the production of the same female, as the eggs can be arranged in two sets and the patterns paired, the variation of each complete set being in the tint of the markings. Probably the female lost her first mate and paired again immediately.

It is a remarkable contrast that the nests of this species should all be built in hollow spouts, whilst an equal number of its close ally, *C. cenchroides*, in the Irwin district of the south-west, should, with one exception, have been adapted nests of the common Crow, the exception being built on the shelves of a precipice, possibly in the nest of some other Hawk or Raven.

GOSHAWK (*Astur approximans*).—Rare. A specimen shot by a friend and brought to me, and another, probably its mate, observed in same locality by myself a month later.

OSPREY (*Pandion leucocephalus*).—A single bird observed on the lower de Grey.

This concludes the Hawks. I saw nothing of the Lesser Goshawk (*Astur cruentus*), and I was both surprised and disappointed at not meeting with the Spotted Harrier (*Circus assimilis*) when I reached the open plains.

MARBLED OWL (*Ninox ocellata*).—The common Owl of the district. I am inclined to think it a migrant, as I flushed five from the foliage of eucalypts during one morning's walk in the upper Coongan district. In all I found five nests. They were all in hollow limbs at various depths, and, with one exception, a lot of chopping was necessary before the eggs were accessible. Three is the usual number of eggs, which are large for the size of the parent bird. An interval of several days seems to elapse between the laying of each egg. The first nest I found was in a very small dead and isolated gum-tree in a secluded gully in the heart of the ranges. The remaining four were all near the main river.

The only other Owl observed was a solitary example of either *Strix delicatula* or *Strix novæ-hollandiæ*. The glimpses of it I got were too fleeting, however, to make identity certain. I failed to discover any evidences of its mate.

A kangaroo-hunter told me of a small Owl, rather grey in appearance, to be met with on the upper de Grey, but he was unable to give a detailed description of its plumage.

RAVEN (*Corone australis*).—All the Crows I examined were Ravens. I found several nests, but in each case was just too late for eggs.

It is, of course, possible that the Crow (*C. coronoides*) occurs too.

MAGPIE-LARK (*Grallina picata*).—Abundant and familiar on both Coongan and de Grey wherever water was obtainable. I observed many nests, both old and new.

BROWN SHRIKE-THRUSH (*Collyriocincla brunnea*).—Rare, and extremely local. I only met with three pairs—two of them in the same creek and near the old nests of *Uroaëtus audax*; the others in a creek some miles away. I found one nest; the eggs, however, were unfortunately damaged through a twig falling into the nest. It was blowing a gale at the time. I shot a pair, as I thought I could detect differences in the song, and that the general appearance of the birds was less robust than that of south-western birds. I send them for inspection.

BLACK-FACED CUCKOO-SHRIKE (*Graucalus melanops*), native name Te-by-by.—Not uncommon along the Coongan and de Grey Rivers. Several nests were found; one obtained away from water and near the old nests of *Uroaëtus audax*.

WHITE-SHOULDERED CATERPILLAR-EATER (*Lalage tricolor*).—Not uncommon in suitable haunts along both Coongan and de Grey Rivers.

RED-CAPPED ROBIN (*Petræca goodenovi*).—Distinctly rare, and only met with on the Upper Coongan. I found one nest with young. In the case of another pair the male had not assumed his nuptial plumage. I had noticed this fact previously, years ago, on the Murchison goldfields.

PIED ROBIN (*Petræca picata*).—Rare and extremely local, and a migrant. I spent hours trying to locate the nest of one pair, but without success. Later on I saw them feeding a single young bird in some thick scrub.

SHORT-BILLED TREE-TIT (*Smicronis brevirostris*).—Rare, and extremely local. This was one of the surprises of the trip. I quite expected to meet

with *S. flavescens*. There was, however, no mistake. I am too well acquainted with the familiar call of "Winnie-wieldt" to be deceived. I had an interview at very close quarters, too. Both parents were feeding a fully-fledged young one.

**PSEUDOGERYGONE.**—At Condon I shot a small bird in the mangroves. It was uncommon, and difficult to shoot without blowing it to pieces. I was guided to it by its notes, which somewhat resembled those of *P. culicivora*. Its plumage, however, differs from the latter very conspicuously, and, as I am unable to identify the species, I send the somewhat damaged skin for inspection. I was fortunate enough to find an empty nest. It was placed at the summit of a young mangrove about 8 feet in height. I tried hard for eggs, but from the behaviour of other pairs I think I was between broods. I heard the same notes in the mangroves at Port Hedland.

**WHITE-WINGED WREN (*Malurus leucopterus*).**—Not much in evidence, and on only two occasions did I see adult males. I think one pair had a nest, or newly-fledged young, in a patch of thick herbage by the upper Coongan.

**PURPLE-BACKED WREN (*Malurus assimilis*).**—This was the *Malurus* of the district, but in no instance did I find it far from the main river. In July the males were assuming full plumage, and building operations commenced at the end of the month.

I found half a dozen nests, but had not much luck with eggs. With one exception the nests were very cunningly concealed in the masses of drift clinging to the scrub growing in the sand-banks in the bed of the Coongan. The exception referred to was constructed in a dead and recumbent bush, without any concealment whatever. It might readily have been mistaken for a small bunch of dried herbage. It contained young birds, which hopped out on my too near inspection. Later on I found a female sitting on one of her own eggs and one of the Bronze-Cuckoo (*Chalcococcyx basalts*).

I saw not the slightest evidence of polygamy in the case of this species. This *Malurus* is double-brooded.

**WESTERN FANTAIL (*Rhipidura preissi*).**—I was both surprised and pleased to see this familiar south-western species in the mangroves at Coongan and Port Hedland. The young were on the wing.

**BLACK-AND-WHITE FANTAIL (*Rhipidura tricolor*).**—In scattered pairs throughout the district. I obtained a nest and three eggs close to the old nests of *Uroaëtus audax* often before referred to.

**YELLOW-SPOTTED BOWER-BIRD (*Chlamydotera guttata*)?**—A Bower-Bird undoubtedly occurs on the Ridley River, which is in reality the lower Strelley. A kangaroo-hunter gave me a good description of both the birds and their play-ground. The Strelley River is reputed to fall into the lower de Grey. A watercourse does actually connect the two rivers, but the real Strelley falls into the sea at its own mouth, its lower portions being called the Ridley.

**STRIATED GRASS-WREN (*Amytis striata*).**—Very rare, and local in the extreme. I only met with it in two localities, in a particularly ferruginous range of hills, and I am not sure that in the second case the bird I saw more than once was not a solitary male. I shot one pair for identification. It is a wary but not secretive species like its congener, *A. gigantura* (Milligan). The individuals I met with haunted a series of very stony gullies, with very little scrub, but where the spinifex was growing in innumerable large clumps. I was attracted by the pleasing song, which resembles that of a *Malurus*, but is fuller, more musical, and more sustained. I spent many hours searching for a nest, but all in vain, and latterly the bird or birds I was watching seemed to disappear altogether.

As the two specimens I shot do not agree *in toto* with Gould's description, I send them for inspection.

MEGALURUS.—Last April, at sunset, at Port Hedland, I could hear a *Megalurus* uttering its plaintive notes in the mangroves opposite the jetty. The notes were similar to those of *M. gramineus*.

CARTER DESERT-BIRD (*Eremiornis carteri*).—This species was confined to the spinifex of the upper Coongan, and was by no means common. I spent a lot of time over it, and then did not get a nest, though I actually saw in several instances the parent birds carry building material into a clump of spinifex, and, after a short interval, come out of the same clump with the beak empty. I think, had I remained a little longer in the district, I should have been successful, as the species is evidently a late breeder. But I was anxious to reach the main de Grey, which had been pictured to me as a sort of ornithological "land of promise," but there the species was quite absent.

RED-BREASTED BABBLER (*Pomatorhinus rubeculus*), native name Ca-cac-co.—These vivacious and noisy birds haunt the cajaput thickets of both the de Grey and Coongan, and their bulky nests are conspicuous objects in such localities. Often five or more nests will be seen in the same tree. The trouble is which to climb to. I found the best way to solve the difficulty was by patient watching—not such a pleasant matter in a country swarming with tormenting bush-flies. I only obtained two clutches of eggs.

BROWN SONG-LARK (*Cinctorhamphus cruralis*).—Very rare on the extensive plains of the lower de Grey and near Condon. Not observed elsewhere.

RUFOUS SONG-LARK (*C. rufescens*).—A pair or two in one particular stretch of the upper Coongan and a neighbouring tributary.

TRI-COLOURED CHAT (*Ephthianura tricolor*).—I found one small colony of these lovely birds on a large tributary of the upper Coongan. The first brood was on the wing, and I think the parents were about to produce a second.

It is probable, from what I was told by my friend the kangaroo-hunter, that either *E. aurifrons* or *E. crocea* occurs in the sapphire flats about 5 miles out of Port Hedland.

VARIED-BACKED MAGPIE (*Gymnorhina dorsalis*, Campbell).—I must confess to my not being up to date in my knowledge of the distinctions separating the Magpies of the eastern States from our local birds. For all that, I am well acquainted with the general appearance and habits of the latter. Judge of my surprise when I shot an unmistakable example of the White-backed Magpie. It is perhaps worthy of remark that this specimen was procured on a huge spinifex flat quite clear of the ranges. It was the only one I saw.

LONG-BILLED MAGPIE (*Gymnorhina longirostris*).—This was the Magpie of the Coongan. It was seldom I found it far from the ranges, though it also occurs too on the de Grey. I found one nest containing young, and saw other young birds in captivity in the latter locality.

This species and *Cracticus picatus* are the birds to herald daybreak. At the first signs of dawn their rich, flute-like notes may be heard from the summit of some steep hill or other point of vantage in these rugged ranges. Indeed, I have several times heard both species break into song on moonlight nights. It can hardly be called a common bird, but where it occurs it is not likely to be overlooked. It is significant that I did not find a single nest near the main river. All were in the secluded gullies of the ranges, or in stunted gums growing but a short distance from the foot thereof.

To obtain eggs it was necessary to follow every gully up to its head, for in some solitary tree round the next bend there might be the nest one was searching for. This had one advantage, for in such situations the nests were seldom difficult of access. I found the nests varied much in bulk, but the cup was always very symmetrical and finished with great care. A full clutch of the beautifully-marked eggs formed a pretty picture as they lay in the nest, the latter often framed with a network of vivid green eucalyptus leaves. When the nest was being robbed the parents were very bold, and flew almost into my face, with a vicious snapping of beaks.

Generally speaking the eggs are easily distinguishable from those of the White-backed species, but I think in a large series of both certain varieties would be separated with difficulty. I found a nest containing one young bird and three eggs of extraordinary size, but, being highly incubated, the fragility of the shell, probably owing to their great size, made the task of blowing them impossible. One was fortunately added.

PIED BUTCHER-BIRD (*Cracticus picatus*).—This species haunted similar country to the Long-billed Magpie, and, if anything, it was an earlier riser than the latter, its musical notes being heard often before the faintest sign of dawn. In its habits, too, it much resembles *G. longirostris*. It is usually found in isolated pairs, and to secure nests it was necessary to traverse the rocky gullies of the ranges from end to end, where, frequently in some isolated and stunted gum, the neat and often inconspicuous nest was found. The nests are in every respect small nests of the Long-billed Magpie, but I have taken eggs of the Butcher-Bird in much lower situations than those of the Magpie. In one instance I could touch the eggs without climbing, the nest being built in a moderately tall bush. The female is a close sitter, and on several occasions remained on the nest whilst I was climbing a tree. The highest nest I noticed was at an elevation of 25 feet, or thereabouts, and was built in a tall young eucalypt. This was the only Butcher-Bird's nest I saw by the main river. Three is the usual number of eggs, but very often only two are laid. They vary somewhat in ground colour, but are not distinguishable from eggs of *C. nigrigularis*.

BELL-BIRD (*Oroica cristata*).—A rare bird. One or two heard on the great plateau midway between Port Hedland and the Coongan.

WHITE-BELLIED THICKHEAD (*Pachycephala lanioides*).—See *ante*, p. 143.

BLACK-TAILED TREE-CREEPER (*Climacteris melanura*), native name Chinin-chinin.—The only Tree-creeper in the district. I first noticed it at the crossing of the Shaw River, where I obtained a female. On the upper Coongan it was extremely rare, but in a secluded gully I found a pair, and after some trouble watched the female to her nest in the cavity of a very small gum growing on a stony hillside. I could almost reach the nest-hole without climbing. I decided to chop out the nest, as the female gave me the impression she was sitting. This was soon accomplished. At the bottom of the cavity was a warm bed of kangaroo hair, and on this lay a single egg. This was disappointing, but the egg proved to be highly incubated, and it was just as well I robbed the nest at once.

On the lower Coongan this species was a little more common, and I saw a young brood of three on the wing the first week in October. On the de Grey, too, the "Chinin-chinin," as the aborigines call this Creeper, was not uncommon, and I watched a female to her nest in a lofty and half-dead gum-tree. The nest-hole was at a height of 60 feet or so, and in a rather thin and much-decayed branch. It was quite inaccessible.

This species haunts the cajaputs as well as the eucalypts.

SITELLA.—A single pair seen, but not obtained. These were probably referable to *S. tenuirostris*.\* This was on a large tributary of the upper Coongan.

\* More probably *S. pileata* or *S. leucoptera*.—Eds.

BANDED HONEY-EATER (*Myzomela pectoralis*)?—Very rare. Seen at most only three times, and one shot on the upper Coongan and sent for identification.

YELLOW WHITE-EYE (*Zosterops lutea*).—On arrival at Port Hedland last May, I soon detected the notes of a *Zosterops* in the mangroves which I knew were not those of *Z. gouldi*, our familiar "Greenie" of the south-west. But it was not until after arriving at Condon in the following October that I was able to finally identify the songster. When searching for nests of *Pachycephala lanioides* in the sweltering mangrove thickets I often had the little *Zosterops* within a few feet of my head. It is by no means a timid species, and will pour forth a marvellous volume of song, heedless of the presence of an intruder. Its plumage harmonizes wonderfully with the green leaves and the patches of sunlight on the foliage of the mangroves. At a short distance, unless in motion, it is practically invisible, or only to be detected by the sharpest eye, catching a glimpse of the white ring round the eyelid. I think I was between broods, for the only nest I could find, in spite of persistent efforts, was a much-battered one, from which the young had flown. I could see no difference in its structure from that of *Z. gouldi*. I had the greatest difficulty in obtaining two specimens of the parents themselves. I was lucky enough at last in observing a pair where the mangroves were low and open, and after some trouble got them both.

GOLDEN-BACKED HONEY-EATER (*Melithreptus laticor.*).—This beautiful species was a local bird on the upper Coongan, where it occurs in small family parties, even during what must be its breeding season. On the de Grey it was rare. I also obtained an example at a large creek not far from the Shaw River.

Its favourite haunt is clumps or a series of eucalypt saplings, and here its remarkably loud call note inevitably attracts attention. I have no hesitation in stating that the call of this species could be distinguished at a distance of 1,000 yards on a calm morning. It is a fussy, active bird, hurrying hither and thither without apparent aim or object.

I must confess I could make nothing out concerning its breeding habits. I spent hours in watching it, but I saw no signs of building material being conveyed to a nest or food to a young brood. It is possible it may be a late breeder, and that I left the Coongan just before operations had commenced. The gums were on the point of flowering, and it is possible this Honey-eater may defer operations until such time as they are in full bloom.

LEAST HONEY-EATER (*Glycyphila subocularis*).—Not uncommon on the upper Coongan, but becoming scarcer down the river and on the de Grey. One specimen I shot was remarkably small, hardly larger than a *Myzomela*. Its favourite haunt was in thickets growing in the shingly bed of the river where flood *débris* was abundant, and where permanent pools were to be found. Here its song was to be heard from early sunrise to sunset.

The tiny little nests are difficult to find. Several I discovered were attached to wisps of herbage brought down by the floods; another was in a tall, cylindrical dead bush, where no one would have dreamed of looking for it. I was rather unlucky as regards eggs. Several clutches were quite unblowable, owing to their advanced state of incubation. Under such conditions one is practically helpless with such fragile eggs.

It was a pretty sight to see these little Honey-eaters extracting their food from the gorgeous flowers of the Sturt pea—the latter a feature in themselves, and worth much travelling to view in their natural surroundings of rugged and dark basaltic rocks.

SINGING HONEY-EATER (*Ptilotis sonora*).—A rare bird on the Coongan. Rather more common on the plains of the de Grey and in the mangroves at Condon.

On the de Grey the favourite haunt was the patches of "wild fig" bushes, and at Condon the mangroves where the creeks tailed out into the plains.

CARTER HONEY-EATER (*Ptilotis carteri*), native name Tūi-dee.—This was the commonest Honey-eater of the whole district, but I never found it far from water. It is one of the most lively and vivacious of the Honey-eaters, and its song is incessant. I had one favourite flying camp on the upper Coongan, which I called my "cajaput camp," from its being in a thicket of the latter trees. Here was a long, narrow pool of pure, delicious water, and here the Carter Honey-eater made its home. It was the first bird to call in the early morning and one of the last to retire to roost. The whole day long, except on particularly hot days, it was incessantly in motion. Usually in pairs, but very often parties of six or eight would meet on a small branch, and then the shrill whistling and chattering became a veritable babel of sound. It is a pugnacious species, and I have seen it fly at the heads of Doves, Magpie-Larks, and the equally noisy Red-breasted Babblers.

I found nine or ten nests of this beautiful Honey-eater. The favourite situation was in the mazes of a small-leaved climbing plant, each clump of which had to be examined to be successful. They were the usual neat but fragile structures of fine strips of cajaput bark, down, and spiders' webs. The eggs are large, white in ground colour, sparingly spotted with rust-red. As a rule the spots are round, but occasionally dashes take the place of spots. The shells are very fragile, and it is a hopeless task blowing highly-incubated eggs, as I found to my sorrow. In all but one instance two were the full complement of eggs. In this instance there were three, but the third egg presented distinctions from the other two.

KEARTLAND HONEY-EATER (*Ptilotis keartlandi*).—I first encountered this species at Depôt Creek, a locality about 65 miles from the coast. I shot a single example from amongst a number of Carter Honey-eaters in fairly thick scrub growing on the banks of the creek. It was not until I was within a few miles of Marble Bar that I obtained another.

Later on, when I began to do a little ornithological work amongst the creeks near my camp, I frequently came across it, and secured further examples.

Unlike *Ptilotis carteri*, the present species seems rather to keep away from water than to seek it. Possibly this may be due to the habits of special food plants, which in their turn flourish best in drier situations. The favourite haunt of this Honey-eater is the rocky and narrow gullies running up to and amongst the ranges, and where *Ptilotis carteri* does not penetrate. It lives mostly in pairs, though I have often flushed five or six from some favourite flowering bush. Like all members of the genus *Ptilotis*, it is a lively species, though it lacks the exuberant vivacity of *P. carteri*. It is equally as inquisitive as the latter, and will fly up to within a few feet of the intruder provided he remains motionless.

The notes are very variable, some of them musical, but others, again, rather harsh. It can hardly be called a singer, its efforts in that direction being far inferior to those of *P. carteri*; but, on the other hand, in variety of note or call it far exceeds the latter. It is an early breeder, and by the middle of July I found a nest containing young a day or two old, and a second nest with birds nearly ready to fly. These nests were nearly two miles from permanent water, and at a considerable elevation above the valley of the Coongan.

In all I found about ten nests. In every case they were built low down, and always either in some shrub or large plant growing in the bed of a creek or on the bank close at hand. No concealment is aimed at. The favourite site is a branch of the prickly, grey-green-leaved canjie bushes, the materials of which the nest is constructed—fine strips of bark, spiders' webs, and vegetable down—harmonizing wonderfully with the colour of the foliage.



The nest is usually, but not always, suspended, and in several instances I found nests in a solitary canjie bush of the most meagre and stunted dimensions, and where one would never have thought of searching. Another I found at the head of a sterile, and rocky gully in a flowering hibiscus plant—the only shrub in the neighbourhood! Another nest was in the fork of a spreading but very open-branched shrub of considerable size, but the nest was easily visible when once located. The female is not a close sitter, and on the approach of danger is warned by the male, when she quietly slips off the nest and joins him in his efforts to attract attention to himself and from the locality of the nest. Two is the invariable number of eggs, which are creamy-white in ground colour and sparingly spotted or clouded with ferruginous blotches. The shells are very fragile, and it is quite impossible to deal with highly incubated eggs. If the first brood is successful the parents do not, I think, breed again the same season.

The best way to find the nest is to go to some creek or gully where one or two pairs are to be met with and to watch for an individual passing by with building material in its beak. It is easy in these treeless gullies to follow its flight with the eye, and eventually to locate the nest. During building operations the birds seem to lose all suspicion, and I have watched operations from a distance of only a very few feet.

I find the intensity of the striations of the breast varies somewhat. What I take to be old males are the most marked. In the female they are sometimes very faint, but I could still detect traces in the only pair of nestlings I was able to examine.

**YELLOW MINER** (*Myzantha lutea*).—Common on the upper Coongan and de Grey, and found also near wells and patches of gums on the de Grey plains.

This Miner is equally as noisy and intrusive as others of the genus. Prior to the breeding season it was flying about in small parties of seven or eight. They frequented the gum-trees as a rule, but I not infrequently found them amongst the yellow-flowering acacias of the more open gullies in the ranges and flats.

As the breeding season approached these parties broke up into pairs, which in their turn retired to the secluded gullies to nest. Nearly all the nests I found were in young eucalypts, or in saplings springing up from stumps where the timber had been previously cut down. Some were in tall, spreading branches, and once I found one in a small, scraggy, prickly "canjie" bush. Not a few nests were at the extremities of slender branches of some isolated gum, and quite inaccessible without the aid of special apparatus. The nests were rather large, and somewhat untidy outwardly, but the cup very neatly and warmly lined with kangaroo-hair, vegetable down, or other soft material. Three was the usual number of eggs, but four are occasionally laid; sometimes only two. They resemble eggs of *M. obscura*, but as a rule appear to be a little larger. The shells are rather fragile.

**MISTLETOE-BIRD** (*Dicaeum hirundinaceum*).—A few on the Coongan and de Grey; an individual was seen in the mangroves at Condon.

**CHESTNUT-RUMPED PARDALOTE** (*Pardalotus uropygialis*).—Rare. I only identified this Pardalote after some trouble, and in one particular creek. There were two pairs present. I had the opportunity on one occasion of shooting a pair, but refrained, as I wanted the nest. I did not have the chance again, but I found the nest. It was similar in construction to that of *P. rubricatus*, and, like that, placed at the end of a tunnel some 20 inches deep. The eggs were smaller and more glossy, however, than those of the latter species.

**RED-BROWED PARDALOTE** (*Pardalotus (rubricatus) pallida*),\* Campbell.—

\* See *ante*, p. 142.

This was the common Pardalote of the district. On the Coongan, wherever there were gums, there its monotonous notes were sure to be heard. On the de Grey it was less common, and I heard little of it between the latter river and the coast. On the upper Coongan the main river was more favoured than the tributaries, but the nests were always in the banks of side creeks, or even in little runlets of no more than 1 foot or 18 inches deep. Where the soil was loamy there these runlets had been scoured out by the heavy rain, and I could usually locate the tunnel without much difficulty. A little experience, too, soon enabled me to distinguish an old tunnel from a new one, and also to ascertain by means of a slender stick the probability of the nest containing eggs or being unfinished. The tunnels varied from 20 inches to 2 feet in depth, and a large chamber was excavated at the end to contain the nest. The latter was very substantial, the foundation of strips of cajuput bark and the cup neatly lined with fine grasses.

The eggs were usually three in number, but not infrequently only two. As incubation is nearing the end the female sits closely, and I have several times started to dig out the nest before she flew out of the tunnel. The eggs are pure white, large for so small a bird, and without much gloss. As a rule they are rather broad ovals.

SWALLOW (*Hirundo neoxena*).—By no means common, and I saw no nests.

BLACK-AND-WHITE SWALLOW (*Cheramaea leucosternum*).—Rather rare. A few on the de Grey, where it probably nests in the deep loamy banks of the river.

TREE-MARTIN (*Petrochelidon nigricans*).—Local, but not uncommon, and breeding in hollow limbs of the eucalypts throughout the district.

FAIRY MARTIN (*P. ariel*).—Fairly common, and breeding in colonies under overhanging shelves of rocks, or in cave-like fissures of the ironstone hills. More common on the Coongan than on the de Grey.

PIPIT (*Anthus australis*).—Breeds throughout the district, but most common on the coastal plains at Condon.

WHITE-RUMPED WOOD-SWALLOW (*Artamus leucogaster*).—Breeding on the lower de Grey, and more commonly in the mangroves at Condon. On the de Grey I had a nest under observation near one of my camping places. It was in a cavity of a gum-tree at a height of about 25 feet, and contained young birds. At Condon I found half a dozen or more nests in the mangroves, most of which contained young a day or two old. I got, however, two nests with eggs, and an addled egg in a third nest. The usual situation for the nest was in the topmost fork of the highest mangrove in the immediate neighbourhood. They were easily located, as the male was generally perched near at hand, and on my approach he gave vent to a harsh alarm note, to which the female usually responded and slipped off her nest. The nests as a rule had a more substantial foundation than those of other Wood-Swallows with which I am acquainted.

WHITE-VENTED WOOD-SWALLOW (*A. venustus*).—The common Wood-Swallow inland. On the upper Coongan I found several nests with full clutches of the handsome eggs. With one exception all were built in canje bushes at a height of not more than 4 feet. One deserted nest contained the egg of *Cuculus pallidus*. There were signs around the nest of a squabble, in which the structure had suffered—hence, probably, its desertion. All the nests I found were constructed of curly rootlets or grasses.

LITTLE WOOD-SWALLOW (*Artamus minor*).—I first encountered this rather rare Wood-Swallow at Gorge Creek, where it haunted the rocky hillsides. I afterwards secured three specimens on the upper Coongan, at a still more rocky locality. I refrained from shooting any more, in the

hope of getting eggs, though I could see I should have some time to wait before I should have a chance, the breeding organs at this period (July) being very small.

It was not until the end of September that I found my first nest. I was watching a pair of *Collyriocincla* in a very rocky and timbered creek some 3 miles from the main river. I had followed one of the Thrushes up a very rocky side creek, when I observed a Little Wood-Swallow skim right up to the precipitous face of a cliff and then back again. I thought I could detect something like a nest in a very small cleft. I climbed to the spot, and there, in a cavity hardly big enough to admit my hand, was a loosely constructed nest of bits of spinifex pressed into the cleft by the weight of the bird, and with just an apology for a cup. It contained one egg. I left it, and returning in a week's time secured a pair.

Lower down the creek I observed a second pair of birds, and I located their nest in the hollow spout of a small gum. I eventually took three eggs from this nest. Still lower down the creek, and where the rocky sides had developed into a massive precipice, I could see another pair of birds skimming about. I had some difficulty in locating the nest, but eventually found it, in a perpendicular joint of the rock in a small cavernous hollow. This nest was only about 2 feet from the floor of the cavern. It was similar in character to the other nests, and I also took three eggs from it a few days later. My fourth nest was by the main Coongan, and was built in an old nest of the Fairy Martin (*Petrochelidon ariel*) from which the spout had been broken away. A colony of Fairy Martins was breeding a few feet away. I took three fresh eggs from this nest also.

This Wood-Swallow never seems to be away from rocks. It is by no means timid, and flies right up to and perches within a few feet of the intruder examining its nest. It has a very pleasing song, resembling that of the Swallow (*Hirundo neoxena*). On the wing its small size renders identification easy. The two central and outer tail feathers being uniform in colour, in contrast with the white tips of the remaining feathers, are also an aid to identity, being plainly visible in flight.

**PAINTED FINCH** (*Emblema picta*), native name Nee-murri.—Confined to the ranges or their immediate neighbourhood. I first made its acquaintance at the crossing of Gorge Creek, where a few haunted the rocky hills adjacent to the creek.

Like the other Finches, this species must have water, and comes down from the rocks with great regularity for its drink. It appears to be gregarious at all times. Even in the breeding season I met with flocks of a dozen or more. Possibly these may have been non-breeding males, for the latter sex is more in evidence than the female in this species.

I found one nest on 12th May, and a day or two later observed another pair collecting building material. The nest is invariably built in a tuft of "buck" spinifex, and usually near the top of the tuft. They may be found near the river, amongst the ranges, or again on the big flats, provided water is near at hand. The nests are rather bulky, and loosely constructed of dead pieces of spinifex, with a lining of brown vegetable down, and often with a further bed of white vegetable down. The eggs are commonly three in number, but no doubt sometimes four are laid. They are pure white, and very small and fragile. The female is a close sitter.

The plumage of the latter on the breast is usually dull black, with a few dirty-grey margins to the feathers, but very old females have a streak of the fiery red of the male down the centre of the breast. The males vary very much in intensity of colouration, very old birds being the most brilliantly coloured.

When crouching amongst the spinifex this Finch is very difficult to see, the brown of the upper parts harmonizing so well with the ferruginous soil.

CHESTNUT-EARED FINCH (*Taniopygia castanotis*), native name New-merri.—Fairly common, but never found far from water. In particular it haunts the neighbourhood of wells provided with automatically-fed sheep-troughs. Old nests of this species are much in evidence. Three and four are not uncommonly found in the same bush. It also breeds in the hollow spouts of gum-trees. I found one in such a situation with the remarkable number of twenty fresh eggs. The usual type of nest is an elongated oval with rather a large entrance. The outward composition of the nest is of fine grasses. This is lined with a small quantity of white vegetable down, the whole very loosely put together. The nest becomes very dirty when the young are being fed, the lower part becoming almost solid with their droppings. The eggs are very small and fragile, and are of the faintest tinge of blue. Clutch from four to six.

RED-FACED FINCH (*Bathilda ruficauda*).—Found both on the upper Coongan and also the de Grey, but local in the extreme.

I disturbed a sitting female from her nest in a small bush in the bed of the Coongan whilst watching a pair of Black-fronted Dottrels (*Ægialitis melanops*). I was much puzzled at first, as I could see at once the nest was not that of *T. castanotis*. It was very round, rather large, and woven in quite a different manner, and, moreover, had a scant lining of white feathers. I hid myself and watched, and after a time the female slipped back into the nest. I saw at once I had found something new to myself. I returned to camp for my gun, and eventually secured a pair. On comparing them with the description in Hall's "Key," I was rather puzzled. I found the tail *not* very long, and the plumage of the female very similar to that of the male—just a little less pronounced, in fact. Hall states—"Female, uniform buffy-brown." I subsequently found this should refer to the nestling, not to the adult female.

On the de Grey I secured a couple of nestlings for examination, with the above result. I found the old nest near at hand and a few feet above, in the same prickly climbing plant, was a new nest containing eggs. Still higher up the vine was an old nest of *Taniopygia*, and a second one evidently tenanted, but the thorns were too much for me, and I had to leave it alone.

The call of the Red-faced Finch is very feeble, and resembles somewhat that of *Zosterops gouldi*. Like the other Finches, it must have plenty of water. The plumage is a lovely combination of delicate greens and buffs, relieved by the fiery vermilion face.

TAWNY FROGMOUTH (*Podargus strigoides*).—Not uncommon on the upper Coongan, and several nests found. It appeared to me that these north-western individuals were paler and more uniform in plumage than those of the south-west. The nests I saw were generally in some isolated and stunted gum growing in the rocky and more secluded gullies.

OWLET NIGHTJAR (*Egotheles nova-hollandia*).—Three examples in all seen, two being disturbed from hollow spouts when hunting for Parrots' and Owls' nests. In one instance the remains of the previous year's eggs were noticeable, but no specimens of the eggs were obtained.

BEE-EATER (*Merops ornatus*).—Very common, and I think resident, both on the Coongan and de Grey.

FAWN-BREASTED KINGFISHER (*Dacelo cervina*).—In scattered pairs along both the Coongan and de Grey. The extraordinary guttural notes heard both at early dawn and after sunset. I was only able to locate one nest, and, as I was leaving the upper Coongan, I chopped a hole into the limb, but to my regret was too early for eggs. I am inclined to think the female is a close sitter and refuses to be scared from her eggs by knocking with a tomahawk on the butt of the tree. The only way to find the nest is to watch a

pair, and this entails much patience, as they are apt to sit for a long time quite motionless on some dead limb.

**RED-BACKED KINGFISHER** (*Halcyon pyrrhopygius*).—Not uncommon throughout the district. I obtained eggs on the upper Coongan. On the de Grey the blacks had dug out a young brood, which they were taking home to be cooked and eaten.

The tunnel to the nests I dug out was not more than a foot long, but the nesting chamber was very roomy. The tunnel sloped upwards, unlike those of the Bee-eater and Red-lored Pardalote.

**SACRED KINGFISHER** (*Halcyon sanctus*).—Not uncommon on the de Grey, but only a pair or two observed on the Coongan. Amongst the mangroves at Condon was a Kingfisher with a white collar, but on the wing it looked a more brilliant-coloured bird than *H. sanctus*. I am strongly inclined to think it was *H. macleayi*. Unfortunately, I failed to get a specimen.

At Port Hedland, perched on the railings of the jetty, was a very dusky-looking Kingfisher with no white collar. Its flight, too, appeared to differ from that of the two foregoing species. I think this was *H. sordidus*.

**RUFIOUS BUSH-LARK** (*Mirafra (Woodwardi) secunda*).—I first encountered this species at Marble Bar, where I shot three at the beginning of June in the present year (1908). The locality was a huge flat bounded by gently sloping hills, almost devoid of scrub, but thickly covered with tufts of "buck" spinifex. On dissection these proved to be males, and from the fact that I saw no more of the species in the same locality, I think they were on migration. The breeding organs were very small.

It was not until the following September that I saw anything more of the species near Marble Bar. I was walking up a gentle slope, some 2 miles or so from the spot where I obtained my first specimen, when I observed a bird fly past me with something in its beak. I stood still and watched, but it was not until I had shifted my position several times that I got a clue to the exact locality of the nest, which I only found by a close search. I could not follow with the eye the movements of the parent bird in and out of the clumps of spinifex, and, as I subsequently found, she alighted each time at some little distance from the nest. The latter was placed in the lee of a small tuft of spinifex, the stems of which actually formed part of the back of the nest. The latter was simply a hole in the ground, probably scratched out by the parent bird, and neatly though sparsely lined with fine grasses, without hair or wool, a low wall of coarser grasses, neatly woven, forming the front of the nest. It contained two nearly full-fledged young birds. I am of opinion that this nest was somewhat flattened out owing to this latter fact. Whilst I was examining the nest the parent birds simply remained passive lookers-on, and betrayed no especial anxiety, nor showed any of those artifices to attract me from the nest, as so many other ground-building birds will do.

Just about a month later than this I was on the de Grey River, about 35 miles from its mouth, and I found myself in the headquarters of the species. The de Grey here flows in a rather deep bed, with vast level plains on either side, almost treeless, and with only small patches of scrub. Here *Mirafra secunda* was to be found in scattered pairs, or even in little colonies of three or four pairs, throughout the plains as far as I was able to explore them. But they were most abundant in the neighbourhood of a large clay-pan, which in average seasons always contains water, situate some 10 or 12 miles from the main river. Herbage round this clay-pan was quite luxuriant, and the closely-growing tufts of grass reached almost to my knees.

In the early morning, whilst the atmosphere was fresh and comparatively cool, the song of the male resounded from all parts of the neighbourhood. I was much reminded of the rich English river valleys on a warm spring morning, when the air is filled with the song of the Skylark, for *Mirafra* is a Lark in its habits and song, though in some other respects it shows an

affinity with the Pipits (*Anthus*). It has the habit of ascending to a considerable height, and there remaining suspended in mid-air, from whence it pours forth its pleasing song. The latter resembles that of the Skylark, but is neither so melodious nor so loud, but is equally well sustained. Certain notes resemble those of *Cinctorhamphus cruralis*, others those of a Plover or Sandpiper, and others again those of *Emberiza miliaria* (the European Bunting). It is quite possible the Sandpiper-like notes may have been imitative in this particular locality, for I learned that Plovers and Sandpipers were often abundant at this clay-pan in the rainy months of the year. Like the Skylark, too, *Mirafra* will sing at night or long before daybreak, and on bright moonlight nights, I fancied more than once, when guided by the sound, I could detect the little songster soaring overhead. In the field *Mirafra* may readily be distinguished from *Anthus*, both by its appearance and by its general behaviour. In colour it is of a richer brown, and its shorter tail gives it a less slender appearance than that of a Pipit. Its flight, too, is less undulatory, though it often put me in mind of the jerky flight of *Anthus pratensis* (the European Meadow Pipit). Moreover, *Mirafra* usually alights behind cover, from which it frequently runs out to take a peep at an intruder. Again, it has not the habit, like *Anthus australis*, of wagging its tail up and down. It runs nimbly, but not so quickly as the latter species.

The foregoing remarks refer for the most part to the male, for, according to my observations, the female must be a skulker. I had the greatest difficulty in obtaining a pair of females for specimens, but, on the other hand, the males were easy to shoot. This may be true only during the breeding season.

At this clay-pan, despite the abundance of the birds, the nests were exceedingly difficult to find. But when one considers the vast area of suitable breeding-ground it is hardly to be wondered at. Except by flushing the female from the nest, or detecting her during building operations, it is quite impossible to find them. They are seldom to be detected at the ordinary glance. Also, I am of opinion that the male, when the female is actually on the nest, keeps watch from some point of vantage, from which he utters a rather shrill and stridulous alarm note when an intruder draws too near. The female then quickly slips off the eggs and runs some distance away before rising, or perhaps remains skulking in the long grass. It is a significant fact that each of the three nests I found was discovered during the prevalence of strong winds, when all birds were seeking shelter. Irritated at my want of success, I tried all hours of the day in my searches for the nests—from daybreak to dusk—and on one occasion armed with a long wand with which to beat the tussocks as I walked along.

My first nest was found where the tufts of grass were high, but not growing so close together as in other places. In the earlier part of the rainy season this had all been under water. A female flew—not fluttered—from the lea of a tuft of grass at my feet. Nothing was visible until I stooped down and pressed back the tuft. There, in a little excavation sheltered by the overhanging stems, was a perfect and neat little nest containing two eggs and one newly-hatched bird. I was at once reminded of the European *Anthus pratensis*, though it had its own peculiarities. It was small and very neatly made, and may be fairly described as semi-domed, for the contents were not visible when the nest was viewed from above. It resembled the nest found at Marble Bar, but was, no doubt, a more perfect specimen. It had one peculiarity. The back was formed as before by the stems of grass growing *in situ*, and the front of neatly woven grasses as before; but on either side were pads of sheep's wool neatly and closely woven together and incorporated with the front of the nest. It was quite impossible to bring away the nest in a perfect state without cutting out with a spade the whole tuft of herbage and earth it was growing in. I much regretted I had no camera to photograph the nest with its natural surroundings. I found two other nests quite

similar in character, but the second nest was placed in the middle and not at the foot of a small tuft of grass, and, despite this fact, the concealment was not so effective as in the present instance.

The eggs are French-grey in ground colour, profusely dotted and dashed (longitudinally, as a rule) with dark grey or dark brownish-grey, but in all the eggs I found there is not much tendency towards a zone of markings. The eggs are quite indistinguishable, except perhaps in being a little larger, from certain varieties of those of the European Meadow Pipit. A fourth nest was found, in the usual situation, by a teamster, who, knowing I was searching for the eggs, with a mistaken kindness, pierced them, and placed them in an ants' nest to get rid of the contents. I need hardly mention the result. The wrecked shells on examination showed no peculiarities in markings from the eggs before described. I only obtained one young bird. Its plumage differed but little from the adult, but the margins of the feathers were more rufous, and the centres rather duller in tint. On comparing the series of males I obtained, I find they are easily divisible into a light and dark phase of plumage. This may be due to age or otherwise, but the breeding organs in all cases were in the same enlarged condition. In the great heat of mid-day, *Mirafra*, in common with most birds in the north-west of this State, seeks the shade, and my hopes were often raised at flushing individuals from my very feet, but always to be disappointed by finding nothing more than a few bird-droppings. Probably each male has his favourite tuft for shade purposes.

PALLID CUCKOO (*Cuculus pallidus*).—Most in evidence on the upper Coongan, but I only obtained one egg. This was in a nest of *Artamus leucorhynchus*. The proprietors had undoubtedly deserted this nest. I saw a young bird, however, being fed by a pair of *Ptilotis*.

NARROW-BILLED BRONZE-CUCKOO (*Chalcococcyx basalix*).—The only small Bronze-Cuckoo I met with. I obtained one egg in the nest of *Malurus assimilis*, with one egg of the foster-parents.

COUCAL (*Centropus phasianus*).—A few pairs on the Coongan and some of its larger tributaries. Also observed on the Talga River, and again on the de Grey. I was surprised to hear the remarkable notes issuing from a clump of mangroves, in the early morning, at Condon. It could hardly have been breeding there, I think.

PINK COCKATOO (*Cacatua leadbeateri*).—At Condon I saw a pair of young birds of this species in captivity. They had been obtained further up the coast, in a range of hills a few miles inland.

BARE-EYED COCKATOO (*Cacatua gymnopsis*).—Rare. A pair or two on the upper Coongan. I think I had located a nest in a tall gum-tree. The female was not sitting, so I unwillingly had to come away without getting the eggs.

I heard several reports as to the abundance of white Cockatoos in different localities, but when visited not a bird was to be seen. On the de Grey I only saw a party of four. I think they were referable to the present species.

ROSE-BREADED COCKATOO (GALAH) (*Cacatua roseicapilla*).—Found in scattered pairs throughout the district. I found four nests, one of which contained newly-hatched young. None of the nests was difficult of access. All were in hollow gum-trees, and the bottom of the cavity was in each case plentifully lined with fresh gum-leaves. A clutch appears to be five, and about a fortnight elapses before the last egg is laid.

COCKATOO-PARRAKEET (*Calopsittacus nova-hollandiae*).—A few pairs both on the Coongan and de Grey, but I saw no signs of nesting.

NORTH PARRAKEET (*Barnardius occidentalis*), native name Pun-bunba.

In scattered pairs all along the Coongan and de Grey. This seems rather a secretive species, and will remain sitting in the shade for hours at a time.

Except in one instance, when I saw four together, I never observed more than one pair at the same moment.

I was greatly puzzled with regard to the breeding of this species. I gave a lot of time to the question, but the solitary case in which any evidence of nesting was apparent was on the lower Coongan. I had a native with me, and after a long search he climbed a tree and chopped out a cavity in which he said he thought there was a nest of the "Pun-bunba." The cavity certainly did contain an egg, but this was unfortunately broken by a chip of wood falling upon it during operations. I saw nothing whatever of the birds at the moment.

I am strongly of opinion that this Parrakeet was not breeding, and may delay nesting operations until the eucalypts are in full bloom, or for some special seed to mature, on which to feed the young.

On the de Grey the same state of things prevailed, and, though I offered the blacks a liberal reward for either eggs or young, none were brought into camp.

BETCHERRYGAH (WARBLING GRASS-PARRAKEET) (*Melopsittacus undulatus*).—Rare on the upper Coongan, but a few lower down that river, and also on the de Grey. Two or three pairs evidently intended nesting in a large gum-tree on the Talga River, but I was too early for eggs.

BARRED-SHOULDERED DOVE (*Geopelia humeralis*).—I only met with this Dove on the Coongan, where it was far from common. It favoured the tracts of cajaputs, and was most common around my favourite camp, called after the name of the latter tree. It is a noisy bird, and the males perch on some point of vantage and call continually one to the other. It is readily distinguishable on the wing from either of its congeners by the large tract of chocolate feathers on the flanks. When at rest the square and comparatively short tail prevents its being mistaken for the more common *G. cuneata*.

I found several nests. As a rule it breeds at a greater elevation than the latter species; the nest, also, is rather more substantial, and the eggs are larger. The female is a close sitter. The nest is very small, and composed of a few small twigs as a foundation, with a lining of fine roots, the latter being worked into a circular form.

This is one of the very few birds I have met with possessing a blue iris, the colour of the latter being pale porcelain-blue.

The call note resembles the syllables "Olly-wattle."

GROUND-DOVE (*G. tranquilla*).—I only met with this Dove in the mangroves at Condon, where it was by no means common. In spite of much labour I only found three nests, the eggs in one of which were on the point of hatching.

I found the species very timid, quite unlike the acclimatized individuals of the same species at South Perth. I had much trouble in securing a specimen for identification.

The first nest I found was obviously an adapted Egret's nest, to which no additions had been made. The second was a true Dove's nest, built in a parasitic plant growing on a tall mangrove. The eggs are two in number, and nearly pure white in colour. The call resembles the syllables "Zo-coco."

LITTLE DOVE (*G. cuneata*), native name Calli-gora.—Very common on both Coongan and de Grey. I found about a dozen nests, the majority with eggs, but some with newly-hatched young. The nests were of the most fragile and diminutive character, and it is only when one sees the young at home that one realizes the nest is quite ample for their accommodation. The



situation of the nest varied from a height of 2 feet to about 8 feet. A favourite position was the fork of a snake-wood bush. Here the little circular, but for all that woven, platform is placed, and one can only wonder how the eggs do not fall out during the prevalence of a strong wind.

Like that of *G. humeralis*, the female is a close sitter.

**FLOCK-PIGEON** (*Histriophaps histrionica*).—I only met with this species at the big clay-pan on the de Grey plains, where they came to drink morning and evening. They were uncommon, and either came singly or in pairs. They fly low, and I could not follow the return flight with the eye very far. I could not, therefore, form much idea where they were breeding. I secured a pair. The female, however, was in such poor plumage that I did not skin her, and the male I obtained had an old wound on the shoulder of his wing, probably through colliding with the neighbouring telegraph line.

**RED PLUMED-PIGEON** (*Lophophaps ferruginea*).—This curious bird I found most common on the upper Coongan. It favours rocky places, but requires permanent water near at hand. Prior to the breeding season it was in little parties of six or seven. In habits and flight it reminds one irresistibly of the European Grey Partridge. It runs nimbly, and will skulk in the same manner as the latter species, almost allowing itself to be trodden upon before rising. Its call note is a deep, guttural "cöö-r-r-r."

The nests are more often found by accident than design. It will breed anywhere amongst the spinifex, and generally at a little distance from the water. I was only fortunate enough to find one. The locality was a huge flat at the foot of some stony hills, and through which a large tributary of the Coongan was flowing. A little hollow had been scratched in the ground where the spinifex was sparse and stunted; this had been plentifully lined with short lengths of spinifex, and on this bed the two cream-coloured eggs were laid. These eggs were highly incubated, and the female sat until I almost trod upon her. It is curious to note that the ground where the nest was situated was of an opaline character (geologically travertin). The eggs harmonized perfectly with the colour of the ground, but the ferruginous-coloured parent must have been correspondingly conspicuous. Protection of the eggs whilst the female is away feeding or drinking seems on the face of it to be more aimed at than protection of the sitting bird.

**CRESTED PIGEON** (*Ocyphaps lophotes*), native name Cal-cal-goa.—Only met with on the lower Coongan, though it no doubt occurs on the de Grey too. It was far from common, and I searched in vain amongst the cajaputs for its nest. Like all Pigeons, it comes to drink at regular times.

**LITTLE QUAIL** (*Turnix velox*).—At the big clay-pan I flushed a quail or two. I think they were of this species, but I could not secure one.

**BLACK-TAILED NATIVE-HEN** (*Microtribonyx ventralis*).—A single example seen on the de Grey.

**WILD TURKEY** (*Eupodotis australis*).—Generally distributed over the whole district. Most common on the de Grey plains, where I saw numerous tracks of old birds accompanied by their young. In one instance I observed the tracks of a pair of young with those of the female.

**STONE-PLOVER** (*Burhinus grallarius*).—The call notes heard, more often on the great plateau between Port Hedland and the Coongan than in other localities. A steward on board the s.s. *Sultan* had a pair of young ones in captivity. They were caught higher up the coast, near Broome.

**DOUBLE-BANDED DOTTREL** (*Ochthodromus bicinctus*).—Specimens obtained at Port Hedland and Condon. They were not in adult plumage.

**ORIENTAL DOTTREL** (*O. veredus*).—A few around Condon. I shot a pair and hung them up in a room of the hotel preparatory to skinning them. During lunch a very small species of light-brown ant attacked them and in

an hour's time ruined them by eating away all around the throat until all the small feathers dropped out.

BLACK-FRONTED DOTTREL (*Ægialitis melanops*).—Fairly common throughout the district. I took a nest with four eggs in the bed of the upper Coongan.

CURLEW (*Numenius cyanopus*).—Not uncommon at Port Hedland, but still more numerous at Condon. I was told they were present at the latter locality all the year round.

GREY-RUMPED SANDPIPER (*Heteractitis brevipes*).—I shot a pair of Sandpipers at Port Hedland, and again met with the same species at Condon. I take it to be the present bird.

COMMON SANDPIPER (*Tringoides hypoleucus*).—Not uncommon on the de Grey, and again on the beach at Condon.

GREENSHANK (*Glottis nebularius*).—A few seen at Condon.

LITTLE STINT (*Limonites ruficollis*).—Common at both Port Hedland and Condon.

SHARP-TAILED STINT (*Heteropygia acuminata*).—A few seen at Condon.

CURLEW STINT (*Ancylochilus subarquatus*).—Fairly common at Condon.

CASPIAN TERN (*Hydroprogne caspia*).—A small flock of this fine Tern at Condon. There were other smaller species flying about, but most of them showed signs of immaturity, so none was shot.

SILVER GULL (*Larus novaehollandiae*).—Common at Port Hedland and Condon.

STRAW-NECKED IBIS (*Carphibis spinicollis*).—Not uncommon throughout the district, but I saw no signs of its breeding.

WHITE-FRONTED HERON (*Notophox novaehollandiae*).—Met with both on the Coongan and de Grey. I saw nests with young in the former locality.

WHITE-NECKED HERON (*N. pacifica*).—A flock of this species at the big clay-pan, and individuals seen on the de Grey and Coongan.

LITTLE MANGROVE-BITTERN (*Butorides stagnatilis*).—In the mangroves at Condon I found three nests of this species. They were mere platforms of mangrove twigs, and were placed on convenient forks of the tallest trees. Two of these nests contained three young birds, and the third three very small pale green fresh eggs. The young were covered with pale dove-coloured down, and had straw-coloured irises.

Several times in the ranges I flushed a species of Night-Heron I was unable to identify, but spared them, in the hope of obtaining nests later on. I now regret I did not shoot a specimen, as I am quite at a loss to know what they were.

LITTLE BLACK CORMORANT (*Phalacrocorax sulcirostris*).—Seen only on the Coongan and Talga Rivers.

PELICAN (*Pelecanus conspicillatus*).—Seen, and some specimens examined, on the upper Coongan and Talga Rivers.

BLACK DUCK (*Anas superciliosa*).—The only Duck I identified. It breeds on the Coongan, where I saw several broods of young.

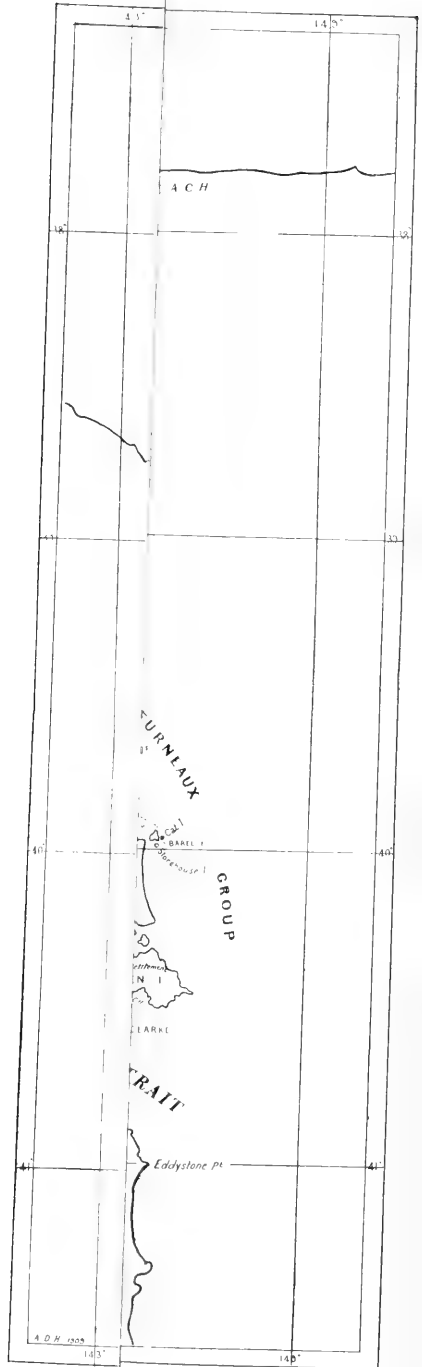
EMU (*Dromæus novaehollandiae*).—So uncommon that the only evidences of its presence were recent tracks.

[Members of the A.O.U. are indebted to Mr. H. L. White, of Scone, New South Wales, for the publication of these interesting notes, which were specially written for him by Mr. Whitlock.—EDS.]



THE

PLATE XV,



FROM A DI

## Narrative of the Expedition Promoted by the Australasian Ornithologists' Union to the Islands of Bass Strait.

BY (CAPT.) S. A. WHITE, ADELAIDE.

IN connection with the Melbourne session of the A.O.U., the Council resolved to have an expedition to the various islands in Bass Strait, and appointed Mr. A. H. E. Mattingley, C.M.Z.S., sole organizer and leader.

On the 24th November last, at midnight, the following ornithologists and friends met on the South Wharf, Melbourne, and boarded the specially chartered s.s. *Manawatu*, namely:—W. N. Atkins, H. Baker (Consul for U.S. America), J. Barr, C. L. Barrett (*The Herald*), Captain J. Gilkison, W. Grattan, Z. Gray, G. T. Howard, B.A., B.S., M.D., W. Kendall, M.R.C.V.S., A. H. Kenyon, J. A. Kershaw, F.E.S., A. C. Langmore, J. Leach, M.Sc., C. L. Lempriere, M.B., C.M., Edin., A. H. Mattingley, C.M.Z.S., J. W. Mellor, D. Macdonald (*The Argus*), E. B. Nicholls, M.A.C.D., H. Huntington Peck, O. G. Perry, G. M. Robertson, O. W. Rosenhain, A. Scott, A. N. B. Were, Captain S. A. White, and Mrs. S. A. White.

Under easy steam we brought up the following afternoon off Seal Rocks, Western Port, and the deep, wailing cry of these strange animals could be heard several miles to leeward. A strong wind was blowing and a heavy sea was running, but in spite of this Dr. Lempriere's motor launch was at once lowered, and soon a very eager landing party had scrambled down the ship's side and were off to make closer acquaintance with the seals. With such a high sea running it was with great risk that a landing was effected. The leader, with the cinematograph, was the first to make a plunge through the surf, and one by one the rest followed till a small party stood on dry rock, surrounded by five or six hundred seals. These animals were with cubs, and the old lions showed fierce displeasure at being disturbed. In a very short time the cinematograph was in action, giving forth its whirring sound. Disquieted in this way, some of the old seals would rise up on their flippers and give a roar of rage, while others would make their way, with a rolling, awkward motion, to the edge of a rock and plunge into the surf. After a number of records had been taken, and after a good tossing and wetting, all the party were safely on board the little craft again.

### KING ISLAND.

We then stood away for King Island. What a place of dread to the old sailing ship masters was King Island in those days when clipper ships plied regularly between Great Britain and Australia! Sailing along the "roaring forties" many a



Map of Bass Strait (showing Route of A.O.U. Expedition.)

FROM A DRAWING BY A. D. HARDY, F.L.S.



fine vessel dashed on the rugged coast of the island, going to pieces in a very short space of time. I believe over thirty wrecks are credited to this dangerous coast, with the appalling loss of over 800 lives. After visiting King Island one can understand how quickly a ship would go to pieces. Early one morning we rounded the north end of the island, with a heavy sea running, which was rolling in on Navarin Reef with a boom like thunder, the white foam spouting yards into the air, presenting a grand sight. It was on this dangerous reef that one of those many terrible wrecks occurred. The convict ship *Neva* struck it on a wild night in 1835, tearing herself to pieces on its jagged rocks. One shudders when one thinks of the three hundred women convicts who were on board, cast shrieking into the boiling sea; some reached land, only to die of starvation in the thick scrub. It is not an unusual occurrence even to the present day to come upon the remains of a human skeleton in some thick part of the scrub, or to find their charred bones after bush fires. We were glad to enter Currie Harbour, the capital of the island, where we were storm-bound for thirty-six hours; but we put in the time very profitably. Some of our party visited a pretty islet in the harbour, where a rookery of Silver Gulls (*Larus novæ-hollandiæ*) was discovered. Their eggs lay upon the ledges of rocks in numbers, with little or no nest—just a slight depression scratched out, where they deposited their dark olive-brown mottled eggs. Other members of the expedition penetrated the interior of the island in quest of small birds which frequent the dense scrub; others kept to the rocky shore or sandy beach in search of marine objects; and some rash gentlemen essayed a long and rough ride to the opposite coast and back, visiting Sea Elephant Bay, but seeing none of the animals which give the bay its name. My wife and self set out for a 5 or 6-mile tramp into the centre of the island. I regret to say we found that the big timber had been and is being destroyed by ring-barking and fire; the tall bleached and charred trees stand out against a dark sky, monuments of man's destructive hand. We had travelled several miles before we entered the thick scrub, and, in places, dense patches of tall cutting-grass, which made travelling very difficult. It was well into the afternoon when we had gone about 6 miles and camped to boil the billy and have lunch. By this time we had noted several species of birds. On the open heath country, before entering the scrub, the little Pipit (*Anthus*) was very plentiful. Amongst the dense timber the Black Crow-Shrike (*Strepera fuliginosa*) was seen occasionally; the White-bearded Honey-eaters (*Meliornis novæ-hollandiæ*) were fairly plentiful, and their sharp note was continually heard from the thick undergrowth, while the conspicuous yellow marking on the wing would be seen as they darted across some open space from one



thicket to another; the Fan-tailed Cuckoo (*Cacomantis flabelliformis*), from its solitary perch on a dry limb, gave forth its mournful note; a Blue Wren, the largest of its kind (*Malurus elizabethæ*), was fairly plentiful; so also were the little Tits (*Acanthisa*); the Yellow Wattle-Bird, the Tasmanian form (*Acanthochæra inauris*), was seen in the timbered country. We also flushed a pair of Parrakeets at some distance, which I took for the Green Parrakeet (*Platycercus flaviventris*). In the more open country the Flame-breasted Robin (*Petroica phœnicea*) was to be met with; so also the Dusky Robin (*P. vittata*). We saw both the White-fronted Heron (*Notophox nova-hollandiæ*) and the Night-Heron (*Nycticorax caledonicus*). We reached the boat that evening before dark, after a 12-mile tramp through mostly thick scrub.

Next morning we steamed round the coast to the south side of the island, to Seal Bay. Here a boat-load of excursionists found landing very difficult, for all had to leave the boat some distance out and wade through the surf to land. The object in calling here was to visit a great deposit of bones on the slopes of an ever-drifting sand-hill. They are the bones of many animals, most of them extinct before the white man visited the island, such as wombat, Emu, native cat, and a large species of kangaroo—all peculiar to the island; and the theory is that the island, being covered in dense forest and scrub, was subject to fierce fires, such as occur on the mainland. On these occasions smoke and burning cinders are carried by strong winds far across the island, and so the conflagration covers the island, driving or consuming all before it. All living things rush on to escape the flames, find themselves out on a sandy point, where they perish, and we find their bones in countless numbers to the present day.

The warning whistle from the steamer caused the zoologists to pick up their precious bones, and the photographers their paraphernalia, and make for the ship's boat, for it was well known that the captain would not give the warning unnecessarily. It was no easy task to board a small boat tossing in the surf, one moment at one's feet and the next on a big wave. Still, after a good ducking, all got safely on board, and the steamer stood out to sea.

#### ALBATROSS ISLAND.

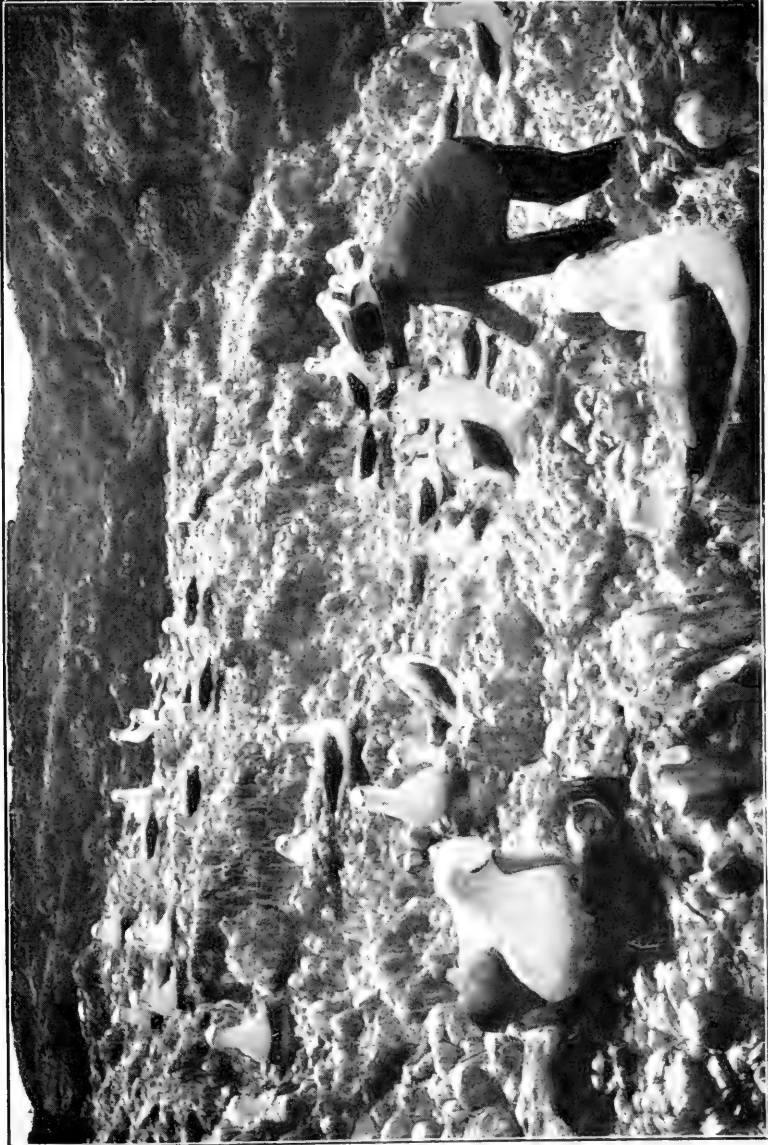
Our next place of call was Albatross Island, a large, barren rock rising out of an almost always angry sea. Here we met with a great disappointment, for one of the chief objects of the expedition was to visit a wonderful Albatross rookery that crested the islet at this time of the year. There are few nesting places of these noble birds ever visited by man, and the ornithologists were anxious to get records of the nidification of this

species—the White-capped Albatross (*Thalassogeron cautus*). The elements were against us, for the huge seas swept up to this rugged pile of rocks, spurting white foam high in the air. These seas broke incessantly against the lofty crag, which meant disaster to any landing party. The little steamer pitched and tossed in an angry sea as she steamed past this barren pile, and those on board had to be content with viewing through their binoculars those grand and stately birds sitting on their nests.

#### HUNTER GROUP.

With much disappointment, the expedition stood away to the Hunter Group, and brought up in a snug little cove called "Chimney Corner," under the lee of Three Hummock Island. Here the *Manawatu* lay peacefully at anchor, and the members of our party were glad to have a little respite after the tossing the elements had given them since last port of call.

Three Hummocks Island derives its name from three high hills which rise in the centre of the island. It is mostly covered with low scrub, and good-sized timber growing along the water-courses in the valleys, while open grass country, with here and there a small swamp, is also to be met with. This island would be a fine field for the botanist, for small flowering shrubs and plants seem very numerous and of many species. Some members of our party diligently explored the sandy beaches and rocks in search of shells and marine objects, while a party of venturesome photographers waded out at low tide to a small islet where several species of sea-birds were nesting, and were afforded some fine photographic subjects. Some of the ornithologists penetrated the thick scrub to study the habits of and procure small birds that frequent such localities, while others tramped some 5 miles or more to a Mutton-Bird (*Puffinus tenuirostris*) rookery. This rookery extended from 2 to 3 miles along the coast, and there must have been hundreds of thousands of these birds incubating their eggs. Pacific Gulls (*Gabianus pacificus*) were found nesting on the rocky points; Black Oyster-catchers (*Hæmatopus unicolor*) were also found, with eggs placed on the sand just under the dunes, above high water mark, and the Hooded Dotrel (*Ægialitis cucullata*) was found in like situations. The Pied Oyster-catcher (*H. longirostris*) was seen on the beach in company with the allied species. The Black Crow-Shrike (*Strepera fuliginosa*) was seen along the coast as well as in the timber country, and I believe a nest was taken by one of the party. The little Dusky Fantail (*Rhipidura diemenensis*) flitted about in its restless way amidst the undergrowth; the Fan-tailed Cuckoo (*Cacomantis flabelliformis*) was observed in several localities; and a Yellow-tipped Pardalote (*Pardalotus affinis*) was giving forth its short note amidst the gum-leaves, almost too far up to be seen. The Green Parrakeet



Rookery of White-capped Albatross (*Thalassogeron cauttii*).

FROM A PHOTO BY THE LATE H. P. C. ASHWORTH.



(*Platycercus flaviventris*) appeared to be plentiful, and a solitary individual or two of the Flame-breasted Robin were seen. I have no doubt if a longer stay had been made on the island a great many more birds would have been identified.

From the Hunter Group a course was set for the Tasmanian coast, but on our way we called at Penguin Island, a mere rock of a few acres in extent, surrounded by dangerous reefs. It was with no little risk that our boat picked her way amongst sunken rocks, and dropped anchor several chains off shore. A boat-load of ornithologists and photographers put off, and after some trouble effected a landing. Bird-life was abundant, consisting chiefly of Mutton-Birds and Penguins, their nesting burrows completely honeycombing the top of the low island. At every step one sank up to the thigh. Several pairs of Pelicans (*Pelecanus conspicillatus*) had taken up their nesting quarters on this rock, and in rude nests amongst the tussock-grass were seen the lime-encrusted, dirty-white eggs. The birds themselves, being very wary, had taken flight at the first approach of the steamer, and their ungainly-looking forms could be seen bobbing about on the water some distance out.

#### TASMANIA.

On 1st December, at daybreak, the *Manawatu* was moored alongside the wharf at Devonport, on the North Coast of Tasmania, in order to take in fresh water and provisions. All were pleased to have an hour or so in the pretty little town, after a week's tossing among the western isles of the Strait. Shortly after midday we cast off from Devonport wharf and steamed down the River Mersey to the open sea. Keeping along the north-eastern shore of Tasmania, we dropped anchor under the lea of Waterhouse Island, but did not land, it being too late, and the glass falling.

#### FURNEAUX GROUP.

Next morning we made for the Furneaux Group. The run across Banks Strait to Cape Barren Island was anything but pleasant, with a strong wind and a choppy sea, so that we were glad when the anchor was cast between Cape Barren and Long Islands. As we had several medical gentlemen on board who were anxious to visit the half-caste inhabitants on Cape Barren Island, all landed here. The Furneaux Group, which includes the fine island of Flinders, Cape Barren Island, and Clarke Island, with numerous surrounding islets and rocks, was interesting as being the home of a coloured people descended on the one side from the aborigines of Tasmania and Gippsland. In olden days escaped convicts, soldier and sailor deserters, scalars, &c., sought refuge in the solitary isles, and during raids upon Tasmania and the mainland they carried off aboriginal women quite in the

spirit of the warriors of old, who won their brides by the prowess of arms. Amongst these early adventurers there were some startling life-histories, now almost forgotten. From these strange mixtures of blood there has sprung a race of half-castes ranging through every shade of colour from ebony to the fairest. To-day this primitive and peaceful community consists of between 200 and 300 souls, has been isolated for many years, and knows little of the outside world. They have one great annual harvest in the Mutton-Birds, which come to maturity about March, and many thousands of these birds are captured every year, chiefly from Chappell and Babel Islands. Two-thirds of the harvest are sent to the Tasmanian market, after being plucked, cleaned, and salted down in casks. During the reaping of the harvest every soul leaves the settlement, from the aged to the baby—even the dogs and fowls accompany their owners. The remaining third of the salted birds is kept for the year's consumption, but the crop is generally so heavily mortgaged ahead for supplies of flour, tea, and sugar, that the birds of the one season are eaten up long before the new season's harvest of birds is reaped. At the time of our visit to Cape Barren Island very few families had any meat left, and they were living a hand-to-mouth existence. It was sad to see the poor children gathering a breakfast of raw limpets from the rocks and pig-face weed (*Mesembryanthemum*) from the sandy shore. Tasmania not only has a social problem to solve, but a duty to perform towards this settlement. So far she appears to have done little to grapple with it. The people have many traits of their aboriginal ancestors, and the black hunter's plan of feeding bounteously in time of plenty and starving patiently till the next kill. They can only be stirred to industry by example and instruction, yet they are fine boat-builders and expert boatmen, and should make a fine race of fishermen. Now they do little fishing, with the exception of searching amongst the kelp for a species of fish that haunts this giant seaweed. It seems hard that for the want of instruction the children should be born and reared to inherit the same hopeless, helpless future.

On the morning we landed on Cape Barren Island a glorious view spread itself out towards the beautiful island of Flinders; the shoal water, which gave forth all the shades of green and blue, sparkled in the sunlight between the two islands, with a fine background in the lofty, rugged peaks at Flinders, partly shrouded in a purple mist, which put me more in mind of South African scenery than any I have seen elsewhere. This pleasing scene soon brought our artists into action, and they were busy for some time with the blending of colours. The visit of the *Manawatu* was a red-letter day in Cape Barren Island, for not only was she the largest steamer that had visited the settlement, but the kindly doctors on board visited all the sick on the

island, and did what they could to alleviate suffering. In one case they walked 4 miles out on a sandy track, and found a patient suffering from nothing more than sheer starvation, not having enough nourishment to keep up the frame. Then the dental doctors spent the afternoon in pulling teeth. Again, about 50 lbs. of confections and cakes were distributed among the children, the "surprise party" terminating with a phonographic entertainment, which delighted beyond measure these simple-minded people. Ornithologists found bird-life on this island scarce, and represented by only one or two of the more common species. This is no doubt due to their destruction by the inhabitants. Insects were numerous, due obviously to the scarcity of birds. One creature preys upon the other according to the law of nature. Some of the party made fair catches in entomology.

Leaving Cape Barren Island and its forlorn inhabitants astern, the *Manawatu* steamed along the coast of Flinders Island, threading her way amongst many rocks and islets, till Kangaroo Island was reached. On this low, sterile piece of land a family has taken up its abode, and subsists, or exists, by sheep-farming. We landed a member of our party here—a genial spirit, who passes most of the year on Flinders Island amidst Nature's solitude. We also took on some fresh mutton, and then stood along the coast till the Pascoe Group was reached. Here we dropped anchor, under the lee of Roden Island. Soon Dr. Lempriere's oil-launch was hoisted over the side and lay bobbing about on a choppy sea. When the landing party clambered down into the boat she puffed away to the island, and the landing was anything but easy. The swell would not allow the launch in too close to the rocks, so all had to land by means of the dinghy. The members of the party soon scattered over the island, which is about 50 acres in extent. A pair of Eagles (*Uroaëtus audax*) was seen soaring round the top of a high prominence which formed the centre of the island, but on our approach they flew towards Flinders Island. Their deserted nest was found by a member of our party, situated on the top of the highest crag. It was here we first met with the Cape Barren Geese (*Cereopsis novæ-hollandiæ*). About a dozen were feeding on the pig-face weed, but they flew off as soon as we landed. The mournful call of the Black Oyster-catcher (*Hæmatopus unicolor*) was heard, and we came upon a solitary pair on the rocks or sandy beach, but nowhere in any numbers. The nest of the Pied species (*H. longirostris*) was observed on this island, as well as nests of the Pacific Gull, Penguins, and Mutton-Birds. Brown Quail (*Synæcus australis*), Grass-Bird (*Megalurus gramineus*), and the Hooded Murrelet were noted. A party in the ship's boat essayed a trip to an adjacent island, and after a hard pull against

a strong current and choppy sea were rewarded scantily, for little bird-life was to be seen and no birds nesting. The old nests of Cape Barren Geese were seen in the tussock-grass. Next morning at daylight we continued on our course northward till the Sisters were reached—two high islands but a short distance from the north end of Flinders Island. We ran between the islands and reached a pretty cove. From thence we landed Dr. Howard and party to remain the night on Flinders Island, while the *Manawatu* steamed down the coast, and we were to return and pick them up on the following day. This land party took four days' provisions, in case of emergency, for should the wind chop round to the west the steamer might have to stand out to sea for several days. Mr. Kershaw joined the party, being anxious to procure a specimen of the Flinders Island wombat, which is supposed to be a distinct species from that of Australia. We continued our course down the west coast of Flinders, with a high sea running, and as we breasted the seas that rolled in from the wide Tasman Sea, that stretches leagues away to New Zealand, our spirits were anything but cheerful, because it seemed as though, like at Albatross Rock, there would be little chance of landing on the wonderful Gannet rookeries, which we were then making for. Strange to say, about noon, just as we were approaching Babel Island, the wind died away, and we steamed in through a channel between Cat and Babel Islands not more than 250 yards wide, and dropped anchor under the shelter of Cat Island, with Storehouse Island near on the starboard and Babel Island on the port bow. Wind and sea had now abated, and but for the slight ground-swell one could imagine oneself on an inland lake—conditions that may not be experienced once in six months. All were eager to land on Cat Island. The cinematograph and operator went ashore in the first boat, for it was always understood that the records were to be taken before the birds were disturbed. After landing on the slippery rocks, which had to be done with care, for as each swell brought the boat up on the rock, it paused but a moment, and was then swept out again, all clambered up the tussock-covered hillside. The whole island is completely honeycombed with Mutton-Bird and Penguin burrows, and at nearly every step one would sink down past the knee, to the discomfort not only of the members of our party, but of the poor bird incubating in the burrow. At last all had gained the ridge, including the only lady member of the party. What a marvellous sight met our eyes! On this bare crest of the island was a Gannet (*Sula serrator*) rookery, an acre of living nesting birds, each sitting on a little raised mound of earth and *débris*, with a slight depression on the top, in which rested a single dirty-white egg. Each bird was just out of range of its neighbour's bill. Amongst the





Gannet (*Sula serrator*) Rookery  
(Cat Island).



thousands of these graceful birds of striking plumage many were keeping up a harsh screaming cry, while others were coming from and going to sea. A male bird would come in to relieve his mate in the task of incubation. A strange manœuvring it was to see the bird alight a yard or so from his mate. Then the relieved bird had to run the gauntlet of the other birds' bills before she could reach the outside ranks (for, like other seabirds, they cannot rise on the wing straight off the ground). When the relieving bird reaches his mate a pleasing performance takes place: the pair crane their long necks and rub bills together many times, then cross and recross necks, uttering a low murmuring love-song the while, in striking contrast to their ordinary cry.

A little colony of Silver Gulls was in close attendance on the Gannets. Not only were they watching closely for the fish that the larger birds might disgorge, but also for any young birds or eggs that might be left momentarily unprotected. There were many young Gannets of all ages, from those newly hatched, which are ugly, black, naked little creatures, up to older young—big balls of white down, with black bills and feet protruding, which gave the birds a quaint appearance. The cinematograph operators and the photographers were busy for an hour, and the results have been satisfactory. The remainder of Cat Island was explored. Pacific Gulls (*Gabianus pacificus*) were seen nesting in numbers on clutches of three large spotted eggs laid on rudely made nests amidst the pig-face weed or short grass on ledges of rock overlooking the sea. The birds wheeled over our heads, giving forth loud, harsh cries of alarm. The nest of a Black Oyster-catcher was also discovered, and the young were photographed. It was with difficulty that the party got about on this island. Most of the island is covered with high, coarse tussock-grass, and this, combined with the underground bird-burrows, made walking anything but pleasant. Birds were not always the sole tenants of these burrows, for snakes were about. Occasionally a tiger snake or copperhead was seen neatly coiled on a patch of decomposed granite warmed by the sun's rays. Little Grass-Birds were flushed now and again from the long grass, rising with a twittering call, to disappear as quickly as they rose.

Having all got on board again in due course, we pulled to Storehouse Island. Some difficulty was experienced in landing here, but we succeeded, and members spread over the island to explore. Large rookeries of White-breasted Cormorants (*Phalacrocorax gouldi*) were found, and, although these birds are generally timid and wary, while protecting their young they allowed the cameras to be placed very near them. Here, as at the Gannet rookery, a colony of the Silver Gulls was on watch, and the Cormorants knew only too well that if they left their

eggs or young unprotected for a minute the Gulls would snap them up. Some excellent pictures were taken of the young in all stages, from fully-fledged birds to those just breaking through the shell. The nests were composed of many-coloured seaweeds fresh from the water, and placed on the gentle slope of a bare granite rock, some hundreds forming the little colony. The Pacific Gull was also found breeding on the island, as well as Cape Barren Geese. The young of the latter were seen in several stages. Just before embarking, breeding burrows of the White-faced Storm-Petrel (*Pelagodroma marina*) were discovered—lovely little birds that one sees thousands of miles out at sea skimming gracefully over the surface of the ocean like Swallows. During calms I have seen them sweeping over the glassy surface of the sea with the ease of a butterfly. Again, during storm, I have seen the little feathered waifs breasting the crests of the mighty rollers one moment, and then descending into their deep troughs with the same easy flight.

The last member of the party had hardly boarded the steamer when the wind went round and came upon us with a sudden burst. The water around, which was like glass during part of the afternoon, was within an incredibly short time lashed into foam, and began to tumble in great white masses upon the treacherous rocks that surrounded us. There was nothing for it but to up anchor and run for shelter without delay. We lay the remainder of the night under the lee of Babel Island, with the wind tearing down a saddle of the island and through our rigging with an incessant wailing dirge. The little steamer rolled much as she tugged at her anchor chains. The following morning found us retracing our course to the Sisters. Here we came to anchor and took on board Dr. Howard's party, which had done good work during the short time it had been on land. The *Manawatu* now steamed along the coast of Flinders Island till Killiecrankie Bay was reached, where we dropped anchor in a snug little corner. Lunch was ordered to be packed, and it was not long before Dr. Lempriere's oil-launch and the ship's boats were conveying the party ashore, to scatter over the country, some to search the rocks and sandy beach in quest of marine objects, others to penetrate the thick scrubs and timber-clad ranges to study bird-life, &c. As evening approached the party re-assembled upon the beach, and just before going off to the steamer a fine haul of mullet was made. The anglers of the party had excellent sport at many of the anchorage places. At one place eight sharks were flapping on the deck at the same time. Bird-life on Flinders Island seemed fairly plentiful. At Killiecrankie my wife and self, as was our custom, took a billy-can and some food and struck into the scrub. We followed a salt arm or creek for some distance, which merged into a freshwater stream, which during a normal

season would be a fine flow, but at the time of our visit, being one of drought, had dwindled down to a brooklet. Along this watercourse birds were fairly numerous. A few small parties of Teal (*Nettion castaneum*) were hunting amongst the weed that had collected in the brackish water near the coast; Blue Wrens of the Tasmanian species (*Malurus gouldi*) were plentiful amongst the thick scrub and undergrowth; Dusky Robins were seen wherever an open patch was met with; and a solitary Flame-breasted specimen was observed. A Whistling Shrike-Thrush (*Collyriocincla rectirostris*) made a great noise amongst the tea-tree; *Strepera arguta* (?) was seen on the wing, and his harsh voice ever and anon came from the timbered range across the flat; little Grass-Birds were flushed from the cutting-grass, and a wary old Crow or Raven surveyed the country from the top of a dead giant of the forest. Seeing a eucalypt in flower on the timbered ridge, we made our way with great difficulty through the dense low scrub and high cutting-grass which covered the alluvial flat between the sea and the spur, and through which the creek wound. The tracks of wallabies were very numerous on the damp soil, and of unusual size. Having at last reached the high ground, we camped a little distance from the flowering gum and boiled our billy, keeping an eye on the flowers for Honey-eaters, but not a bird came. Some *Melithreptus* were seen at a distance, but none came near enough for identification.

#### KENT GROUP.

From Killiecrankie a course was steered for the Kent Group. The bold and forbidding coast-line of Deal Island was the first to loom out of the mist, with its warning light perched on an immense pile of granite rocks 1,000 feet above the sea. We steamed up a fine channel (Murray Pass) between Deal and Erith and Dover Islands. It had the appearance of a mighty river confined between majestic cliffs of granite in rugged and picturesque formation. We anchored in a charming little bay called East Cove, and the lighthouse superintendent was soon on board, for he and his family had been in a state of wild excitement ever since they had sighted the steamer. They were untiring in their attention during our stay. After inspection of the light station, and being entertained most kindly by the superintendent and his family, our party divided over the island. The fossil-bearing cliffs to the east of the island were a source of attraction to many. Some bones of an extinct kangaroo were unearthed. The chief object of interest in connection with Deal Island from the ornithologists' point of view was the presence of a species of *Sericornis* (Scrub-Wrens), and luckily four specimens were taken—one by Mr. J. W. Mellor (S.A.), and three by the writer, so the purpose of visiting Deal Island was accomplished. Bird-life here was not plentiful. Flame-breasted

Robins were noticed, also the White-naped Honey-eater (*Melithreptus lunulatus*), Shrike-Thrush, and, of course, the usual shore species, such as Oyster-catchers, Hooded Dottrels, Penguins, &c. The next object in view proved a disappointment. It was known that the Blue Petrels were nesting on South-East Island, a mere mass of rocks, and the expedition was anxious to observe them in their nesting habits. It was found, however, to be impossible to land, and it might be days before an opportunity presented itself, so the *Manawatu* stood away towards Victoria, and the further she steamed into the Strait the stronger the wind blew, and the higher the sea rose, till half a gale of wind was blowing, with an ugly beam sea. The little boat was very light, having burnt nearly all the coal, and her rolling and pitching were decidedly unpleasant. We headed for the Glennies, a group of rocky islets known to all those who pass round Wilson's Promontory. The sea was running so high that it was impossible to land, and our course was changed for Western Port. This shelter was approached in the height of what residents along this part of the coast said was the fiercest gale off the land that had occurred for many years, and at times the *Manawatu* was steaming at full speed but hardly holding her own. The little steamer bustled through it, and came to anchor in the eastern entrance of Western Port. During the night the wind shifted to the westward, and blew with renewed violence. The result was that, on a phenomenally high tide, the steamer dragged her anchors, and in the morning she lay high and dry upon a mud-bank, with no prospect of getting off for some time. Some of the party landed at San Remo, and found their way by boat and rail back to Melbourne. Thus ended rather abruptly a most interesting and enjoyable cruise of 15 days among the islands of Bass Strait.

*Thanks.*—The thanks of the members of the expedition are due to Capt. W. Tait, Chief Officer A. Hawkes, Chief Engineer G. Berwick, and others of the crew of the *Manawatu*, for the active interest they took to make the trip a success.

*Results.*—Apart from the collections made and the information and enjoyment obtained, the chief results of the expedition are :—

(1.) The Tasmanian Government forthwith set about improving the condition of the half-caste population of Cape Barren Island.

(2.) Cat Island, with its wonderful Gannet "rookery," has been proclaimed a sanctuary for sea-birds.

(3.) Discovery of wombats on islands not previously recorded.

*A Suggestion.*—All the islands in Bass Strait are nominally

Tasmanian. For the better protection of birds, notably Cape Barren Geese and Mutton-Birds, it is suggested that the islands contiguous to Wilson's Promontory might, for obvious reasons, be transferred to the control of Victoria.

### Camp-Out on Phillip Island.

BY A. J. CAMPBELL, COL. MEM. B.O.U.

AS it was inconvenient for some members attending the Melbourne session of the A.O.U. to take the fortnight's cruise in Bass Strait, a land party was organized for a week's camp-out on Phillip Island, Western Port, for observation chiefly among the Mutton-Bird rookeries on Cape Wollomai.\*

The party consisted of Mesdames Israel, Mellor, Campbell, Misses Eberhard, Mellor (2), Masters Israel, French, Messrs. J. Mellor, A. C. C. Clarke, A. Bishop, C. E. Campbell, A. J. Campbell (leader), and R. A. Murray (cook).

Leaving Melbourne early on Tuesday, 24th November, by train and steamer the party reached San Remo about 2 p.m. Here fishermen J. F. Brown and Son were in readiness to convey excursionists, luggage, and provisions across the eastern entrance to the appointed camping site on the shore near Cape Wollomai, the great headland of Phillip Island—the selected site of the camp having some days previously been kindly “pegged out” by Constable Kelleher, of San Remo. By nightfall all were safe and snug under canvas.

The encampment consisted of six tents, securely sheltered amongst tea-tree, protected on the weather side by sand-dunes heavily clothed with scrub. The only disadvantage was with regard to water, which had to be carried some distance from soaks.

At 5 o'clock next morning the cook sounded the gong for coffee and biscuits, and shortly afterwards all the party were filing their way through the dewy and scented tussock-grass on Cape Wollomai to explore the Mutton-Bird burrows. Eggs as yet were not plentiful, but sufficient were “hooked” for breakfast. *Puffinus* eggs and bacon (fried) make a most *recherché* meal. The remainder of the day was employed in examining the whole of the rookeries in the neighbourhood, and observations made regarding the extent of the encroachment of wind-blown sand-drifts upon the western side—a serious matter. In the evening, at dusk, the majority of observers were on pig-face weed-covered declivities of the back beach, witnessing the incoming flight of birds—a most marvellous sight, often described by previous writers. The members who remained in camp observed the *Manawatu* (with the A.O.U.'s Strait expedition on board) pass out of the Eastern Entrance and round

\* For locality, see map with “Expedition to Islands of Bass Strait.”

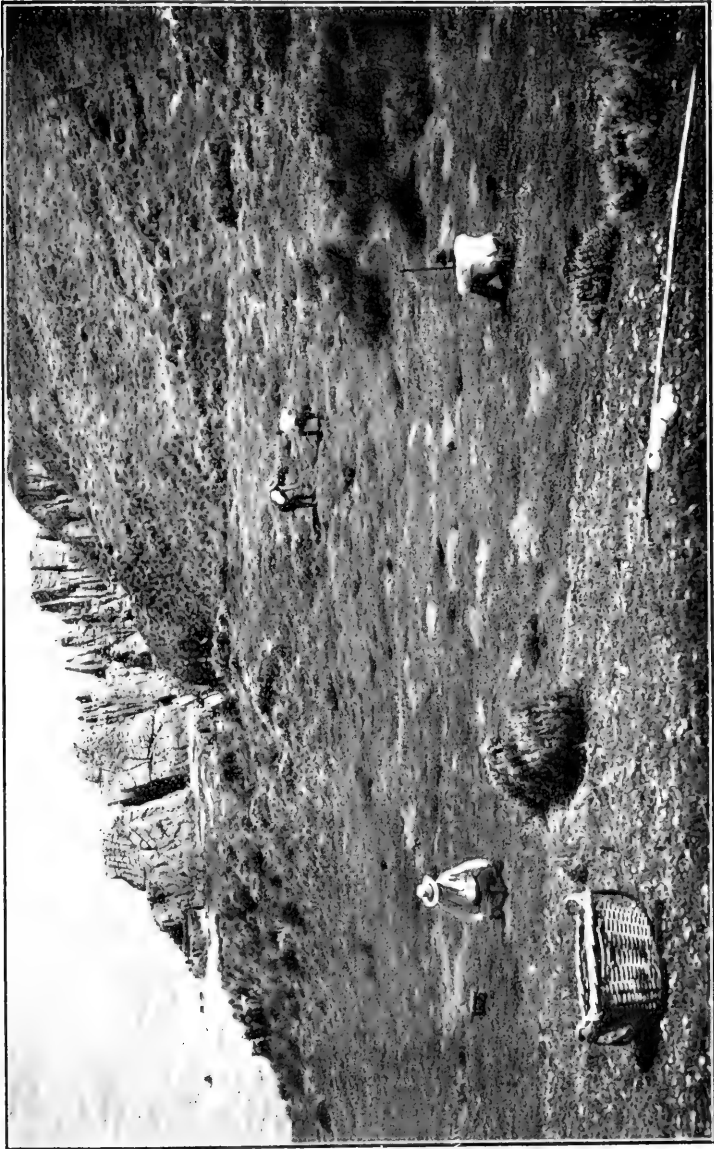
Red Point, bound for King Island. The steamer passed close enough for the passengers to exchange greetings with the shore party.

Thursday, the 26th, was a day of interest. His Excellency Sir Thomas Gibson-Carmichael, the State Governor, had intimated his intention of visiting the camp and rookeries that day. There came a change in the weather—rain descended, and continued till about 4 o'clock. This detained the vice-regal party. However, about 5 o'clock in the afternoon the Government steamer *Lady Loch* arrived and cast anchor off Red Point. His Excellency, accompanied by Mr. Victor Hood, Mr. C. N. Hake, and Captain Bolger, landed, and at 7 o'clock were received by the ornithologists and escorted across the island for an evening's observation. A straight cut was made for the pig-face weed rookery, where, the ground being devoid of scrub, the burrows and movements of the birds could be better seen. The incoming birds did not seem so numerous as on the previous evening. Nevertheless, judging by the flights seen and the noises heard everywhere, it was a strange experience for persons who had never been on a Mutton-Bird rookery before. His Excellency evinced the greatest interest in the novelty of the scene, and asked many questions concerning the life-history of these remarkable Petrels. Notwithstanding the light shed from two tubular lamps, the return to the camp in the darkness was somewhat rough, and there were many tumbles in the tussocks ere the inner beach was safely reached. Amid cheers from the ornithologists and other campers assembled on the shore, His Excellency, with a basketful of eggs, put off for the *Lady Loch*, which departed for Melbourne at daylight.

The remainder of the week was pleasantly spent eggging, fishing, photographing, and observing; while the panoramic scene—marine and landscape combined—from the crown of the Cape was especially admired for grandeur. On a calm day, out to sea, could be observed various flocks of Mutton-Birds floating in dark patches, which alternately rose to view, then fell out of sight, to the motion of the ocean swell.

Probably the most entertaining and romantic night spent was when all the party camped upon a rookery where the birds were thickest. About 9 o'clock the observers, with blankets, rugs, and ready-made coffee, &c., repair by the light of a young moon to the ever-fascinating back beach. Portions of the route are simply alive with birds, which scatter right and left before the pedestrians—clumsily flapping against tussock or scuttling through bush to get out of the way, while the whole place above and below ground is a babel of bird noises—a perfect pandemonium, unique, and comparable to nothing else on earth. As the moon is setting in the sea, a sheltered nook is selected where





Mutton-Bird (*Puffinus tenuirostris*) Eggging  
(Pig-face Weed Rookery, Phillip Island).



some of the observers essay to sleep, but the continuous weird midnight noise prevents them. Those who do snatch "forty winks" are rudely disturbed by web-footed creatures awkwardly waddling over the sleepers' prostrate forms. The beautiful morning star heralds the dawn of day, when, in the crisp morning air, swarms of dusky-coloured birds with mysterious rat-like actions run over the ground, through the scrub, and toss themselves over the cliffs, and in the obscure light disappear seaward. When broad daylight arrives, 260 eggs are picked up, mostly upon the ground, without the aid of crooks. A return is made to headquarters camp, which is reached about half-past 8 o'clock, when a good breakfast rewards the hungry and tired night-observers.

Before returning to Melbourne, a visit was paid by the ornithologists to Mr. John Cleeland, an old colonist of sterling repute, who owns the station Wollomai, which includes the leasing of the Cape for grazing purposes. The visitors were received right royally, and many early reminiscences were exchanged, not forgetting the mention of the famous horse Wollomai, which won for Mr. Cleeland the Melbourne Cup of 1875.

#### OBSERVATIONS.

(1.) The total area of the Cape headland is about 400 acres, clothed chiefly with tussock-grass, sword-grass, stunted "blue" bush, horehound,\* and pig-faced weed (*Mesembryanthemum*). But about a quarter of the area may be described as sand drift.

(2.) From about 150 to 200 acres consist of Mutton-Bird rookeries, the numerous rabbit-like burrows being chiefly on the ocean frontage, but some of the rookeries extending inland. It is difficult to estimate the total number of birds frequenting the Cape for breeding purposes; it is probably not less than one million.

(3.) Judging by observations made in former seasons, the number of birds does not appear to be decreasing. But serious encroachments are being made on the western rookeries (near the neck of the Cape) by wind-blown sand-dunes. Some of the rookeries have been already enveloped, and more are threatened unless the authorities stay the sand movement by such means as the planting of marram grass, &c. *An urgent recommendation is made accordingly.* Local observers say the sand is moving very fast.

(4.) From the evidence of old eggers, it would appear that the Mutton-Birds arrive later to lay than they did in former years, say 20 years ago. Hitherto the focus of arrivals occurred about the 24th, 25th, and 26th November. Now it would appear to be about the 28th, 29th, and 30th, when many eggs are gathered

\* Introduced plant.

from the surface of the ground, scattered throughout the herbage, apparently through the "glut," there being no time or room to deposit them in the burrows. The last season, as late as the 5th December, two parties gathered 200 freshly deposited eggs from the surface of the various rookeries.

(5.) Egging-parties were coming and going all the egging season, but a week's observation proved that at no time were more than 15 boats present, or about 70 persons camped ashore.

(6.) It is recommended that campers pay a nominal fee, as those do on the shores of Port Phillip Bay, or that a small toll per dozen be levied on the eggs or birds collected.

(7.) It is also recommended that dogs shall not be permitted to accompany egging or birding parties on the rookeries.

NOTE.—So far as the Cape is concerned, there appears to be little or no "birding" performed during the autumn.

## Bird Notes from Cleveland, Tasmania.

BY (MISS) J. A. FLETCHER.

### PART I.

AS far as Tasmania was concerned, 1908 proved one of the driest years on record, and, as many places in the island did not receive their usual winter soaking, the drought was severely felt as summer approached. In this particular district of the Tasmanian midlands, which ranges from 600 to 700 feet in altitude, a succession of heavy frosts was experienced, while during the preceding year only a week's severe frost was chronicled.

Owing to the absence of the usual winter and spring rains several small lagoons dried up, consequently some of the waterfowl retreated to the larger ones, while others, such as the Native-Hen (*Tribonyx mortieri*) and the Black Duck (*Anas superciliosa*) made the South Esk River their headquarters. Still, in spite of the fact that the nesting season seemed to be somewhat erratic, many notes were made which may prove interesting. These lagoons are basin-like depressions, and as they are not fed by any creek, drainage from the surrounding hills must find its way by soakage to them. Unlike many of the Southern lagoons, the bottom of these, though muddy, is fairly firm, while in many parts the water, owing, I suppose, to decaying vegetable matter, is very irritating to the skin. Three species of reeds grow in these watery depressions—the ordinary brown, flat reed on the edges and in the shallower waters; a round, green, shorter one in the deeper parts; and amongst this latter rise clumps of a rush often exceeding 6 feet in height. These latter are the favourite nesting haunts of the Musk-Duck (*Biziura lobata*).

Water hyacinths as well as other water-weeds grow abundantly, the former generally indicating a deeper pool. The brown-banded snake (*Hoplocephalus curtus*) is very fond of a retreat amongst these reeds, and lagoon observation is hardly safe unless a person is armed with a trustworthy stick.

NATIVE-HEN (*Tribonyx mortieri*).—During this past season these birds seem to have spent their time travelling backwards and forwards between the Cleveland Lagoon and the South Esk River, which winds its way through the country 5 miles to the east. The majority of them nested at the river, but a few preferred the reed-bed here. Native-Hens, I have been told, are great travellers, and have been seen walking along the railway line near Conara—certainly not very attractive country to them. It was during the month of September last year that the *Tribonyx* became very noisy, and apparently quarrelsome. Their quaint saw-sharpening and grunting noises were to be heard every evening, also early in the morning. Until then their presence in the lagoon would hardly have been suspected. Various situations are chosen for the nests—from the centre of willows to tussocks some distance from water; from a height of several feet amongst driftwood to a depression in the ground. The nests are composed of grass, reeds, or herbage, and are sometimes well built. Often when placed amongst reeds the birds cunningly bend and twist the tops down as a protection from the Harriers (*Circus gouldi*). My experience tends to show that the Native-Hen, when building in clumps, prefers the edges of tiny lakelets, with the nest entrance to the water, the woven reeds partly shielding same. Both birds assist in the construction of the nest. Should they be observed whilst gathering material they will immediately drop it and run for shelter, but if the observer remains perfectly quiet or hidden, the birds will return and pick up their dropped treasures. One nest I found was simply a hollow in the ground amongst tall rushes. It was simply lined with a few dried swamp grasses, and, judging from the egg-shells lying in the nest, five or six chicks had been safely hatched. As far as my observation tends, the eggs are laid every day, and the bird sits as soon as the last egg is laid. I do not know if both birds assist with the incubation, but both parents attend the young ones. These latter are tiny black creatures, and leave the nest almost immediately they are hatched. I believe it is the male bird which occasionally mounts guard while the family is feeding in the open. If danger threatens he gives a warning grunt, at which the little ones squat, and the female bird disappears. Should the warning continue the chickens run crouchingly to cover.

As a consequence of the drought Harriers (*Circus gouldi*) congregated in greater numbers at this home lagoon, and thus

the waterfowl suffered severely. Numbers of nests of the Native-Hen (*Tribonyx mortieri*) and Bald-Coot (*Porphyrio melanonotus*) were found with their contents riddled. The earliest nest I found last year was on 17th October. It contained six eggs, on which the bird was sitting. A week later I discovered another, splendidly made and arched. The bird was, as usual with these birds, invisible, but the eggs were warm; four were chipped, and the other two were very heavy. Later on a second clutch was reared in this nest. A nest found on the 1st December was remarkable for the fact that two of the five eggs were sharply pointed and the whole set smaller than the average.

BALD-COOT (*Porphyrio melanonotus*).—In the same lagoon lives a flock of about twenty of these birds. They often come up on the surrounding common to feed, and are daring enough to mingle with the domestic fowls or fly into a garden close to the lagoon. However, if they see a human being they quickly pop over the fence and fly in their clumsy manner to the shelter of the rushes. They generally prefer to alight in open water, and thence scuttle to cover. What a heavy way the Bald-Coots have of alighting, seeming in some way to stiffen their legs! If anything unusual is noticed whilst the birds are paddling or eating, a warning cry is given, which is sometimes answered by bird after bird right across the lagoon. The effect of a gunshot is indeed weird. As the startled waterfowl give vent to their feelings by cries, it seems as if the waste of reeds and waters had suddenly found a tongue.

The Bald-Coots are rather fond of building tiny platforms on which to stand whilst feeding. They are made of reeds, bitten off and placed across one another, sometimes on the soft mud, occasionally on the short reeds. Often about these places are to be found lumps of chewed reeds or water plants, which have apparently been ejected from the mouth. Excreta is sometimes rather plentiful, showing, I think, that the birds rest on their platforms for some time.

The Bald-Coots appear rather hard to please with regard to the site of their nest, and I am surprised at the number of nests commenced that are generally to be found at short distances from the final and completed one. Here they prefer to build their nests on the shorter green reeds in 3 to 4 feet of water. The nest, made of reeds and herbage, is about the size of a dinner plate, from 4 to 8 inches thick, and raised above the water's edge.

On 10th November, 1907, I flushed a Bald-Coot from its nest on the dry edge of a peninsula. This nest was simply a hollow in the ground, lined and sheltered by short reeds. Seven eggs were in it, and were so like the eggs of the *Tribonyx* that had I not seen the bird as she left the nest I would have thought they were a Native-Hen's. One egg was rotten; the others were

very heavy, and were out in a few days. Since then I have found a second nest in a position similar to above. I cannot say positively that they lay every day, but I believe so. They sit when the clutch is completed. Occasionally an egg will be found deposited in a nest which had previously been robbed. The young ones leave the nest at once, and trail after the parents. They are pretty black creatures, at a distance resembling Langshan chickens. If disturbed they squat in the rushes. The parents have terrific battles with the Harriers, and for that reason appear to keep the babies well within the shelter of the rushes. I watched a Harrier trying to take some young Coots. It repeatedly swooped down, but was met every time by a charge from the old Coot. Slowly the Hawk would sail away, then swoop suddenly back, but the Coot was too wary. For about fifteen minutes the fight lasted, and then the Hawk flew right away. One day I saw two Harriers attacking some Coots in open water, but the latter avoided the onslaught of their enemies by diving. They do not always succeed in evading their enemy, for the bones and feathers of Bald-Coots in the Harriers' nests and eating-places furnish abundant evidence of the Swamp Hawks' success.

MUSK-DUCK (*Biziura lobata*)—My attention was first drawn to the presence of these Ducks by finding, on the 31st May, 1908, an old nest in a clump of reeds on the edge of the lagoon. The nest was filled with wet and rotting reeds and embedded in them were two eggs, which I recognized as those of the Musk-Duck. The down, of course, was indistinguishable. Subsequently I found other nests with egg-shell fragments, and so I determined to watch for the owners of the nests during the coming season of 1908. Occasionally I caught a glimpse of the birds, but they were very shy, and disappeared by diving in the water, and I suppose thence to the cover of the rushes. On 5th October some tall reeds standing in 3 feet of water were searched. Each clump contained an old nest and one or two beginnings which looked as if they were new. From an old nest one rotten egg was taken, evidently left from the previous season. The first nest in which eggs were found was built in the clumps mentioned above, and the top reeds were cunningly plaited and bent down, forming a splendid roof. The body of the nest was formed of woven reeds and rushes, and the eggs were beautifully snug in down, carefully covered over. This was the only lining. Evidently the bird was away feeding, and from this I should think the male does not assist in incubation. The eggs were two in number, pale olive-green, and elliptical in shape. On the 24th October a new nest was found, and close to it another nest in 2 feet of water. The Duck was lying dead outside the nest, partly on the reeds and partly in the water. Poor creature! she had had a terrific fight for her life, as the

trampled reeds and scattered feathers testified. Her assailant must have been a cat or dog, but then a cat could hardly have got out in the water. The breast and neck of the dead bird were torn and gnawed, but her would-be eater had evidently been disturbed. The Duck was in splendid condition, linings of fat showing on her mangled frame. Quite safe in the nest were two eggs, cold, so the bird must have been dead some hours. The eggs were quite fresh. The same date another nest containing three eggs was discovered. Of these it was interesting to note that two eggs were partly incubated; the third had the vein system just showing. This latter was the smallest of the three and an ordinary typed egg. The others were whiter, with a calcareous formation at smaller end. One naturally wonders if the fresher egg were an intrusive one. The next find was another nest of same species. It was interesting, owing to the fact that it contained four eggs. When lifting these out for examination one was noticed to be smelling so badly, though no crack was apparent, that it was set aside for inspection when away from the nest. The other eggs were apparently quite fresh, good examples of their kind, except that one was a trifle smaller than usual. When the fourth egg was opened it was found to contain a Duckling clothed in black down and with tiny black feet. Decomposition had set in. I suppose in this instance the Musk-Duck had repaired an old nest and laid her three eggs over the one. Later on, on the 22nd of November, two more nests were found, each containing two eggs; also a nest from which young had gone. All nests were in deep water, and were built in the tall reeds. The second nest with two eggs was cunningly hidden, with entrance hardly visible. Strange to say, on top of it a pair of Harriers (*Circus gouldi*) had a nest partly built. I wonder how the two would have lived together if the Duck had not finished incubation when the Hawk commenced to sit! Close by was the Harriers' nest of last year. I should have very much liked to watch these strange neighbours, but was unable to do so. Lagoon observations are very difficult; standing in the icy cold water with leeches as companions is certainly not very enjoyable. Most of my observations were made between 4 and 7 a.m., and as I always found the eggs of the Musk-Ducks well covered up, I suppose this early hour was the feeding time of the birds.

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### Stray Feathers.

STORM-PETRELS.—As an illustration of the manner in which errors in natural history are disseminated by popular writers, I may refer to a statement in "Creatures of the Sea," by Frank T. Bullen (1905). In his chapter on Petrels he describes Storm-Petrels (Mother Carey's Chickens) as never seeming to rest upon



the sea surface either by day or by night. When I was leading a seafaring life it was my experience that these birds did not follow a ship at night, but made their appearance an hour or two after dawn. I remember on one occasion, when our ship was tearing before a howling gale, we passed a little colony of Storm-Petrels floating on an oasis of oil, unbroken by a ripple, while all around were raging "white-caps." When I called the attention of an old sailor to this, he said he had several times seen them taking their ease in a similar manner, and he added that before arising on the wing again the birds would have drunk up all the oil.—GEO. GRAHAM. Scott's Creek (Vic.)

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GLADSTONE (Q.) NOTES.—I found a double set (four eggs) in the nest of the Brown Flycatcher (*Micræca fascinans*). The nest was built in a sapling at the height of about 12 feet. One bird was on the nest and another on the edge close to it. When the lad who was with me climbed the tree, two more birds (apparently males) came flying up and joined in the chorus of protest during inspection of the eggs. Two of these were of the usual steely-grey colour, but the other pair was more beautiful, being bluish-grey with a clearly-defined band of dark spots round the larger end.

Blood Honey-eaters (*Myzomela sanguinolenta*) were very numerous this year. They showed a partiality for clumps of scrub, patches of brigalow chiefly, dotted about the open country, and did not seem to care for the larger scrubs. I have never observed them here before, so their visit was a pleasant surprise. Two nests with eggs were seen, both in brigalows.

A pair of Brown Hawks (*Hieracidea orientalis*) nested this year in what appeared to me to be an unusual place—a huge clump of orchids growing on the trunk of an ironbark. The leaves of the plant at the top were tramped flat to make the nest, with a thick fringe left round the sides that effectually screened the sitting bird.—ERNEST D. BARNARD. Kurrajong, 4/12/08.

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MOVEMENTS OF WOOD-SWALLOWS.—I quote a note taken at the time of observation last summer:—"What would seem to be a strange systematic trait of periodical changing of localities has taken place among the Wood-Swallows here. Last year these birds were represented by practically only one species—viz., the Wood-Swallow (*Artamus sordidus*). This season things have changed. Owing to the drought up north, the White-browed (*A. superciliosus*) and rarer Masked (*A. personatus*) species are here in considerable numbers, whilst a Wood-Swallow (*A. sordidus*) is a comparative rarity. In October-November of this year I found White-brows and their nests (but no Masked)

in two or three distinct areas. Now (December-January) the White-brows have almost totally disappeared from these areas, and in their place the Masked species has proportionately increased. Query—Should this be regarded as an accidental happening, or an habitual trait? I think the former theory more probable among migratory birds such as these." After the sudden influx of Wood-Swallows detailed above, the birds have disappeared as suddenly as they came, and there are now but few of either species to be noted hereabouts, therefore if the strange locality-changing noted last summer were again going on it would hardly be noticeable. I have watched closely for any indication of the occurrence, but, seeing none, am convinced that the happening was accidental or capricious.—A. H. CHISHOLM. Maryborough (Vic.), 16/1/09.

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BRONZE-CUCKOOS AT DEVONPORT (TAS.)—This morning early, when out walking near the beach, I had the pleasure of seeing two young Bronze-Cuckoos (*Chalcococcyx basalis*, Hors.) getting their breakfast by the roadside; things were quiet, hardly anyone was about, and the number of caterpillars they extracted from among the coarse herbage was surprising. They were very tame, and allowed me to get so close that I could have touched one with my stick; it merely looked up at me with an expression of curiosity in its bright eye. The upper plumage was of a soft brown colour, slightly tinged with green, the latter tint being barely noticeable; under surface light grey, with just a faint indication of bars on the abdomen. A whitish curved mark extended from over the eye backwards and downwards towards the ear. The bright rufous tint on basal two-thirds of tail was very conspicuous when the bird opened its wings for flight, as were the dark and white bars on the outer tail feathers. The note of these young specimens was a sort of "Cheep-cheep-cheep," very different from the loud, penetrating call of the adult.

The Bronze-Cuckoo is rare about Devonport; I only remember seeing one previously in the district, although the Pallid (*Cuculus pallidus*) and Fan-tailed (*Cacomantis flabelliformis*) species are plentiful enough. As Gould surmised, this species (*basalis*) is the one of its genus which usually visits this island, but it prefers the country around Launceston to the coast.—H. STUART DOVE. West Devonport (Tas.), 1/3/09.

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DOTTRELS' NESTING PLACES.—The Black-fronted Dottrel (*Aegialitis melanops*) seldom nests away from the margins of rivers, billabongs, or waterholes, but a further instance to that related in *The Emu*, vol. vii., p. 157, has come under my notice

this season. One morning early this month, while crossing a bare gravelly hill close to the streets of Stawell, my attention was directed to the antics of a little Dottrel, which hobbled along in front, trailing an apparently broken wing. Watching it awhile from a distance, I found it made several runs towards a certain spot and away again. At this spot I discovered its nest, containing two young not long hatched and one egg. The site of this nest was in a most daring position. The hill was one of those shaft-riddled ridges of silurian shale so characteristic of the gold-mining areas of Victoria, being practically in the town and almost bare of vegetable growth of any kind, from the trafficking of boys, dogs, goats, and cows. The spot was not 200 yards from a main thoroughfare, but at least a quarter of a mile from the nearest water, which was a hillside dam. A photograph shows the site of the nest, among hard quartz gravel and shaley rock, with nestlings and egg resting upon a little platform of smaller particles, mostly ironstone pebbles, apparently carried together by the parent birds, thus raising the nest an inch above the immediate surface of the ground. The nestlings were very quiet, and showed no inclination to run away. The under surface was conspicuously white, but was not seen as they crouched in the nest. The upper surface was a protective grey dappled with black, a white collar on the nape of the neck being distinctly seen in the picture.—A. G. CAMPBELL. Pomonal, January, 1909.

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**WATERFOWL AND WEATHER.**—A very interesting example of bad-weather prediction by wildfowl came under my notice while residing at Essendon, Victoria. There is a fine lake in that district which is frequented by Swans and Ducks, and one afternoon a friend and myself were astonished at the eccentric evolutions indulged in by the former. The Black Swans were turning somersaults in the water, lying on their backs with the head, neck, and upper part of body completely immersed, kicking both feet in the air, then righting themselves, only to repeat the performance; this they kept up for about an hour; while the Black Duck were chasing each other on the wing round the lake. My friend, who owns land in various parts of Victoria and is naturally a keen observer, remarked to me—“We shall have bad weather before long.” Next morning came a fierce wind from the north-west, accompanied by a terrific dust storm, which enveloped the country as in a thick fog, and, penetrating the houses, lay thickly upon furniture, books, and papers. So strong were the squalls that a whole camp was overturned on the shores of Hobson's Bay. Shortly before noon the wind changed to south-west, the air became cool, and the dust settled down; then rain began, and lasted until early evening. Four days afterwards the Black Swans were again

indulging in their eccentric gambols, the day being agreeable, with a light south-westerly breeze. The same evening, however, the wind blew strongly in cold squalls, and next morning there was a high southerly wind, accompanied by a shower. The morning after there was an extremely high, cold wind, with heavy showers, and the night was cold enough for winter, although the season was midsummer. Thus on both occasions was the prediction of the waterfowl amply fulfilled, although at the time they were exhibiting these queer gymnastics the weather was beautifully fine, there being nothing to indicate to the ordinary mortal that a severe change was shortly to take place.—H. STUART DOVE. West Devonport (Tas.), 23/2/09.

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MIGRATORY NOTES FROM CLEVELAND, TASMANIA, 1908.—On the 20th February noticed a flock of seven Spine-tailed Swifts (*Chetura caudacuta*) flying across and travelling north-east. Cold, snowy-feeling winds prevailed during several days of April, so our migratory birds disappeared rather suddenly.

12th June.—A pair of Swallows (*Hirundo neoxena*) seen bathing in waterhole. These Swallows, I believe, have spent the winter here, their chief haunt being some old stables.

16th August.—Fall of snow.

22nd August.—Many Swallows about.

29th August.—Tree-Martins (*Petrochelidon nigricans*) have returned.

2nd September.—Heard Pallid Cuckoo (*Cuculus pallidus*) for first time. Swallows nesting.

10th September.—Small-billed Cuckoo-Shrike (*Graucalus parvirostris*) back to this district.

17th September.—Wood-Swallows (*Artamus sordidus*) seen for first time.

20th September.—Heard and saw Fan-tailed Cuckoo (*Cacomantis flabelliformis*), also Bronze-Cuckoo (*Chalcococcyx plagosus*).

23rd September.—The White-fronted Chat (*Ephthianura albifrons*), which had been absent from district for a year, returned.

Notes on Flame-breasted Robin (*Petroica phænicea*).—As Mr. A. G. Campbell recently contributed a paper to *The Emu*, vol. viii., part 3, on the movements of the above bird, the two or three notes in my diary may be of interest:—12th June.—Flame-breasted Robins (*P. phænicea*) about. 23rd July.—Flame-breasted Robin in lovely plumage.

Brown Kingfisher (*Dacelo gigas*).—Re this acclimatized bird, I am pleased to state they have nested in this locality for the past two seasons. The flock now numbers about nine, and their merry laughter is frequently heard during the early morning and evening.—(MISS) J. A. FLETCHER.

WOOD-SWALLOWS AS HONEY-EATERS.—The following note on the *Artamus* family may be of interest, in view of the fact that it presents two members of the genus in the rôle of honey-eaters.\* In the local Botanical Gardens there are growing several fine specimens of the silky oak (*Grevillea robusta*), and these plants began to break out into their pretty golden-yellow blossoms towards the end of November last. Early in December, when the handsome flowers had opened out into their full glory, I was surprised and interested to note quite a number of White-browed Wood-Swallows (*Artamus superciliosus*) in the trees, evidently in quest of some kind of food. This proved to be but the advance guard of what were to follow later, for within a few days the trees were swarming with the birds. Both the White-browed and Masked species were there, the former largely predominating; but, strange to say, not one representative of the usually plentiful *A. sordidus* was present. Neither were any of the Honey-eaters proper inclined to dispute the right of possession with the multitudinous Wood-Swallows. Lorikeets flew past, but never did they alight in the silky oaks. The only other birds present were a few stray members of the genus *Meliornis*, but these were scarcely noticeable in the dense Wood-Swallow assemblage. Noting at once the absence of the ubiquitous Honey-eaters, I hastily jumped to the conclusion that the trees were affected with some insect scale pest, which would account for the presence of the usually insectivorous Wood-Swallows, but this idea was quickly dispelled by a little closer study of the birds "at work"; and this, by the way, was comparatively easy, for the birds grew so bold in their eagerness to gratify their taste for honey that they took but the scantiest notice of mere human beings. It was a pretty sight to see these Swallows hanging, with all the grace and agility of the Lunulated Honey-eater, head downwards from a slender branch, their beautiful colours—ashy-grey and black, chestnut and bluish-grey—standing out in vivid contrast to the pretty golden-coloured blossoms of the oak, their bills meanwhile being buried deep in the alluring honey-pots. Some of these blossoms I examined, and found the delicate-tinted calyx to be full, in each case, of a colourless, thick, extremely sweet liquid—the attraction which was responsible for the presence of such a large number of the sweet-tongued Wood-Swallows.

What serves to enhance interest in this avine visitation is the fact that, although these trees have been flowering year after year, we have never known the Wood-Swallows to frequent the blossoms before, nor is there—as might be expected—any apparent decrease in the usual abundance of insect life in the district. The birds were always more plentiful in the early

\* Previously noted in *The Emu* by Mr. F. L. Berney, Queensland, and Miss Bowie, Victoria.

morning than at any other period, when probably the coveted sweetness would be thicker and sweeter than in the full heat of the day. I have frequently speculated on the utility or necessity of the brush tongue with which these engaging birds are furnished, but never before have I noted them using it for practical honey-eating purposes.—A. H. CHISHOLM. Maryborough (Vic.), 16/1/09.

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THE LYRE-BIRD AT POOWONG.—There is a matter in connection with the nesting habits of the Lyre-Bird that has completely baffled any attempt on my part at a solution. It is this: Is it regarded as an indisputable fact that each female bird has her individual nest and lays an egg each year? All the male birds that have come under my notice have invariably had two or three females as consorts, yet I can find no proof that all three build nests and lay. On the contrary, considerable evidence is forthcoming to show that of their number only one lays, though probably the others assist in incubation. I can form no opinion of any value as to whether the male bird sits or not, but hope to decide the matter next season by watching the nest from daylight till dark. I have never known a male bird to be flushed from a nest. A short distance from where I live there is a patch of about two acres of the virgin hazel scrub, and at least three Lyre-Birds live in it. Each year they breed, yet, search as I will, only one nest can I find. A little further off is another isolated patch of virgin scrub, containing about one acre, and three females and one male bird inhabit it. This season one nest was built in it; last year there was but one, and one only the year before. As a boy I did a good deal of trapping and 'possuming in my spare time, and a favourite place to set a "springer" was just where a wallaby would land after leaping over a gully. The gullies then were always resorted to by those engaged in trapping; and as a gully is a favourite nesting-place of the Lyre-Bird, it would naturally follow that the trapper would frequently come across their nests. We used to take quite a paternal interest in the ungainly young nestling, and would every day lift it out of its feathery nest, and when it called out the mother would soon appear beside us, greatly disquieted. But of the father bird on these occasions we saw very little; a flash through the undergrowth was all we would ever see of him. I never knew the female to desert her young, however much we handled it; and I have often handled their eggs in the nest, but the birds invariably returned to them. I have also flushed birds from their nests after their eggs have been handled by others. Mr. D. C. Miller, late of Nyora, told me that he once examined an egg in the nest, and found that the bird did not return to it, and it was ultimately destroyed by a lizard. I have known a bird desert her nest before the egg

was laid because some children had felled undergrowth right against the nest. She did not build again that season. A Lyre-Bird has also been known to feed and attend to her young after the nest had been moved bodily to a place of safety by some scrub-cutters. Mr. A. W. Freeman, of Nyora, told me he once took home a young nestling, intending to rear it, but changing his mind after keeping it away all night, he took it back to its nest, and caused it to call out, when the mother bird appeared, and he left them together. In this case the young bird was eventually safely reared. Mr. Freeman also informed me that a friend of his found a nest containing two eggs at Bingenwarri, Victoria. My supposition is that the second egg was laid by another female. I have on three occasions seen these birds shot at night in mistake for opossums, while perching high up in the eucalyptus trees. A peculiar habit I have noticed in this interesting bird is its propensity for building, and sometimes roosting, in most unlikely places. For example, in the acre of scrub before mentioned they have nested for the last three years, not in the most secluded part—so rough, indeed, that cattle are unable in many places to penetrate it—but, on the contrary, right on the outskirts of the scrub, and within some 10 yards from the road. This year's nest is plainly visible to anyone passing, although the traffic is considerable. Indeed, it was a cream carrier who first drew my attention to the exact whereabouts of the birds this season, and he assured me he rarely passed without seeing them. The trees they roosted on this year are also on the outskirts. From the road the two females could be very distinctly seen on their perches, one of them 150 feet up.—L. C. COOK. Poowong (Vic.)

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BIRDS OF INVERLOCH (VIC.)—During the Christmas vacation I had an opportunity of visiting Inverloch, which lies 12 miles south of Outtrim, on Anderson's Inlet, and while there found much to interest an ornithologist. Generally speaking the country in that locality is undulating, the highest parts being covered with a somewhat stunted growth of eucalypts and bracken fern, and the lower portions with heath, tea-tree, sword-grass, &c. In the former birds were numerous, though not representative of many species, those most frequently met with being the Butcher-Bird (*Cracticus destructor*), Buff-rumped Tit (*Acanthiza reguloides*), and Wood-Swallow (*Artamus sordidus*). In the heath country the dearth of bird-life was very noticeable. Black-faced Cuckoo-Shrikes (*Graucalus melanops*), Pallid Cuckoos (*Cuculus pallidus*), and Wood-Swallows were numerous, and very busy amongst the caterpillars which were to be found on the grass and low bushes. In the dense fringe of banksias and tea-trees along the ocean coast, Red and Brush Wattle-Birds

(*Acanthochæra carunculata* and *A. mellivora*), Brown Tits (*Acanthiza pusilla*), and White-browed Scrub-Wrens (*Sericornis frontalis*) were plentiful, while on the ocean beach Silver Gulls (*Larus novaehollandiæ*), Pacific Gulls (*Gabianus pacificus*), Black and Pied Cormorants (*Phalacrocorax carbo* and *P. hypoleucus*), Hooded and Red-capped Dottrels (*Ægialitis cucullata* and *Æ. ruficapilla*) were seen, and eggs of the last-named were noted on 23rd December, the late nesting being due, perhaps, to the fact that my brother took eggs from the some locality on 18th and 23rd November. A Hooded Dottrel's nest containing four eggs (two being the usual clutch) was found on 18th November. These eggs were probably laid by two female birds which were seen in close proximity to the nest. The most interesting part of this district from an ornithologist's point of view is the long, narrow strip of land terminating in Point Smythe, and separating the inlet from the ocean. A fringe of high sand-dunes and tea-tree-clad ridges runs along the coast in a south-easterly direction, and effectively protects the inland portion from the southerly gales. The soil at the western end of this peninsula is sandy, undulating, and more or less covered with banksias, tea-trees, and stunted eucalypts. Banksias grow profusely here, and attain a large size in the more open localities. Bird-life is much in evidence, and the harsh notes of the Red and Brush Wattle-Birds may be heard in every direction. Several pairs of Coachwhip-Birds (*Psophodes crepitans*) were seen or heard in the dense tea-tree scrub. It was noticed that the Brown Tits were found only in the tea-tree along the coast on either side of the entrance to the inlet, while the Buff-rumped and Yellow-rumped species were to be found in the timbered country on the mainland, and always at some little distance from the coast.

Curlews (*Numenius cyanopus*), Red-capped Dottrels, and Black Ducks (*Anas superciliosa*) could be seen nightly making their way down the inlet from the mud-flats to the sandy beach within the entrance.

I had no opportunity of visiting the eastern end of the inlet, but my brother, who was there on 20th November, noted a great number of waders and swimming birds of different kinds, and heard Coachwhip-Birds in the reeds and coral fern growing at the entrance of the Tarwin River. Probably the extensive clearing of timber in the neighbourhood may account for the birds being driven into country so different from what they usually inhabit.

I noticed the following birds, and several others that I was unable to identify :—

Harrier (*Circus gouldi*), Kestrel (*Cerchneis cenchroides*), Black-faced Cuckoo-Shrike (*Graucalus melanops*), Lalage (sp.), Oriole (*Oriolus viridis*), Magpie-Lark (*Grallina picata*), Grey Shrike-Thrush (*Collyriocincla harmonica*), Brown Flycatcher (*Micræca fascinans*), Blue Wren



(*Malurus cyaneus*), White-shafted Fantail (*Rhipidura albiscapa*), Black-and-White Fantail (*R. tricolor*), Brown Tit (*Acanthiza pusilla*), Yellow-rumped Tit (*A. chrysorrhoa*), Buff-rumped Tit (*A. reguloides*), White-browed Scrub-Wren (*Sericornis frontalis*), Coachwhip-Bird (*Psophodes crepitans*), Rufous Song-Lark (*Cinclorhynchus rufescens*), Striated Field-Wren (*Calamanthus fuliginosus*), Rufous-breasted Thick-head (*Pachycephala rufiventris*), White-throated Tree-creeper (*Climacteris leucophæa*), Orange-winged Tree-runner (*Sittella chrysoptera*), White-fronted Chat (*Ephthianura albifrons*), White-backed Magpie (*Gymnorhina leuconota*), Butcher-Bird (*Cracticus destructor*), Yellow-breasted Shrike-Robin (*Eopsaltria australis*), White-eye (*Zosterops caeruleascens*), Yellow-faced Honey-eater (*Ptilotis chrysoptis*), Red Wattle-Bird (*Acanthochæra carunculata*), Brush Wattle-Bird (*A. mellivora*), Orange-tipped Pardalote (*Pardalotus assimilis*) (?), Swallow (*Hirundo neoxena*), Fairy Martin (*Petrochelidon ariel*), Pipit (*Anthus australis*), Wood-Swallow (*Artamus sordidus*), Sacred Kingfisher (*Halcyon sanctus*), Laughing Jackass (*Dacelo gigas*), Pallid Cuckoo (*Cuculus pallidus*), Bronze-Cuckoo (*Chalcococcyx plagusus*), Fan-tailed Cuckoo (*Cacomantis flabelliformis*), Crimson Parrakeet (*Platycercus elegans*), Rosella (*P. eximius*), Bronze-wing (*Phaps chalcoptera*), Stubble Quail (*Coturnix pectoralis*), Bald-Coot (*Porphyrio melanonotus*), Coot (*Fulica australis*), Pied Oyster-catcher (*Hæmatopus longirostris*), Hooded Dottrel (*Ægialitis cucullata*), Red-capped Dottrel (*Æ. ruficapilla*), Curlew (*Numenius cyanopus*), Snipe (*Gallinago australis*), Painted Snipe (*Rostratula australis*), Silver Gull (*Larus novæ-hollandiæ*), Pacific Gull (*Gabianus pacificus*), White-fronted Heron (*Notophox novæ-hollandiæ*), White-necked Heron (*N. pacifica*), Black Cormorant (*Phalacrocorax carbo*), Little Cormorant (*P. melanoleucus*), Little Black Cormorant (*P. sulcirostris*), Gannet (*Sula serrator*), Pelican (*Pelecanus conspicillatus*), Little Penguin (*Eudyptula minor*), Black Swan (*Chenopsis atrata*), Cape Barren Goose (*Cereopsis novæ-hollandiæ*), Wood-Duck (*Chenonetta jubata*), Mountain-Duck (*Casarca tadornoides*), Shoveller (*Spatula rhynchotis*), Grey Teal (*Nettion gibberifrons*).

—G. F. HILL. 17/1/09.

### From Magazines, &c.

IN *The Avicultural Magazine* in the issues of August, September, November, and December of last year, Mr. D. Seth-Smith, F.Z.S., the editor, gives the first instalments of a series of Australian field notes and bird observations. It will be remembered that Mr. Seth-Smith visited Australia in the interests of the Zoological Society of London, and that he returned to England with a splendid collection of live stock for the Gardens. The field notes above mentioned, which are written in an extremely entertaining manner, refer to his brief sojourn in Western Australia, and were made chiefly in the company of Messrs. E. A. and L. Le Souëf, of the Perth Zoo. Mr. Seth-Smith enjoys the reputation of being a successful aviculturist. He now proves himself expert in the art of field observation. Readers will look forward to the balance of Mr. Seth-Smith's notes as they appear from time to time.

"A DESCRIPTIVE LIST OF THE BIRDS NATIVE TO VICTORIA, AUSTRALIA."—This important publication has been issued as a supplement to *The Education Gazette and Teacher's Aid*, 16th December, 1908, and is compiled by Mr. J. A. Leach, M.Sc., the organizing inspector of Nature-study, Education Department, Victoria. The "List" will surely be fruitful of much good, and if it be all imbibed by the rising generation there will be little need for *Bird Protection Acts*. The "List" is very plain and concise. In parallel of columns—(1) there is the number of the species found in Australia; (2) number of the species in Victoria; (3) names—vernacular, local, and scientific; (4) dimensions of the birds in inches and parts thereof; (S.) occurrence south of the Divide; (N.) occurrence north of the Divide; (5) kind of country in which the species is usually seen; (6) general description, &c., of the bird. Mr. Leach is to be congratulated on the compilation of such an extremely well-thought-out and useful list. The only item with which the reviewers are inclined to disagree is the occurrence of too many local trivial names, such, for instance, as "Tom Pudding" for the Hoary-headed Grebe, "Painted Lady" for the Avocet, "Go-aways" for the Babbler, &c. As the "List" is issued primarily for educational purposes, why not insert the correct or accepted vernacular, and educate the students up to it?

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HYBRID WOOD-SWALLOW.—Mr. North remarked that in the first edition of "Nests and Eggs of Australian Birds" (p. 44, 1889) he had recorded that the late Mr. George Barnard, of Coomooboolaroo, Daringa, Queensland, had on one occasion found the adult male of *Artamus superciliosus* paired with the adult female of *A. personatus*. Mr. North then exhibited a specimen of unusual interest, an hybrid adult male, *Artamus superciliosus* × *A. personatus*, obtained by Mr. H. Greensill Barnard, of Bimbi, Daringa, Queensland, on the 9th September, 1908. Also, for comparison, adult males of *A. superciliosus* and *A. personatus*. Mr. Barnard came across a flock of *A. superciliosus* nesting about five miles away from home, and among them was the hybrid, which was mated with a female of *A. superciliosus* engaged in building a nest. It resembles *A. superciliosus* on the upper parts, has the forehead, lores, cheeks, ear coverts, and throat black, passing into blackish-grey on the fore-neck; remainder of under surface ashy-grey with a slight vinous wash; under tail coverts pale ashy-grey; over and behind the eye a distinct white eyebrow, but not extending so far on to the sides of the crown of the head as in *A. superciliosus*. Total length 7, wing 4.85 inches.—*Proc. Linn. Soc. N.S.W.*, xxxiii., p. 735.

A HIBERNATING HAWK.—In an article in the *Agricultural Gazette* of Cape Colony for December the following appears:—“All birds ought to be looked upon as friends of the farmer and enemies of locusts, and more especially the Brown Hawk with his V tail (Dutch name Kaken Valk, Kaffir Ntyoyieja). Owing to his habit of catching his food on the wing, I have timed this Hawk, and found him to catch 50 or 60 locusts per minute. He stores his food for winter in hollow trees. Another peculiarity of this bird is, it loses all its feathers while lying dormant during the winter. I recently came across one of these birds in its winter quarters, where I found he had collected thousands of locusts, grasshoppers, beetles, grass snakes, lizards, toads, and a few chickens. Surely this bird ought to be better protected, being both a vermin-killer and a scavenger. I will be pleased to communicate to you further observations I may make, as I consider the subject (locusts) one that every person ought to do what he can to facilitate the extermination of—this terrible plague to our agricultural industry in the colony.” I have read of squirrels and other quadrupeds storing up food for winter consumption, but this is the first instance of a bird doing so that has come to my knowledge. Putting off his clothes when he goes to sleep in winter—I don't know what to think about that! Do you know anything about this Brown Hawk with the V tail?—“A.O.U.” Rockhampton.

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DISCOVERY OF THE NESTS AND EGGS OF TWO RARE BIRDS.—In *The Proc. Linn. Soc. N.S.W.*, xxxiii., p. 799, the important announcement is made that “Mr. North exhibited the nest and eggs of Newton's Bower-Bird (*Prionodura newtoniana*, De Vis) and of the Tooth-billed Bower-Bird (*Scenopæetes denti-rostris*, Ramsay), together with skins of the females, shot near the nests. They were obtained, through the instrumentality of Mr. Robert Grant, from Messrs. John and George Sharp, of whom the latter procured them respectively on the 9th and 7th November, 1908, on the Bellenden Ker Range, after waiting near the nests for over an hour, and flushing the females from them several times, before shooting them and taking the nests and eggs. The nest of *Prionodura newtoniana* is an open cup-shaped structure formed externally of dead leaves and portions of leaves, including fragments of stag-horn ferns and a small quantity of dried mosses, and is lined inside at the bottom with thin dead twigs. Externally it measures  $5\frac{1}{2}$  inches in diameter by  $2\frac{1}{2}$  in depth, the inner cup measuring  $4\frac{1}{2}$  inches in diameter by  $1\frac{1}{2}$  in depth. It was built about the centre of an opening 4 feet long and about 6 inches wide, inside in a rotten tree, 3 feet from the ground, and contained two eggs. The eggs are oval in form, the shell being finely granulate, lustrous, and of a uniform

fleshy-white. Length (A) 1.4 × 0.98 inches; (B) 1.38 × 0.97 inches. The nest of *Scenopæetes dentirostris* is a slightly concave structure, formed throughout of twigs; coarser ones below, and finer ones above, as a resting place for the eggs; it is most flimsy and loosely built, and resembles one of the smaller Pigeon's, or a Dove's nest, and averages 5 inches in diameter by 2 inches in depth. It was placed in a low, thickly-foliaged tree, about 17 feet from the ground, and in the most dense part of the scrub. The nest contained two eggs, which are oval in form, the shell being very finely granulate, lustrous, and of a uniform creamy-brown colour, resembling very much the eggs of *Aelurædus maculosus*, but of a more distinct brownish hue. Length (A) 1.63 × 1.1 inches; (B) 1.62 × 0.9 inches. Subsequently Mr. Sharp found other nests and eggs of the same species."

In *The Victorian Naturalist*, xxv., pp. 160-168, Mr. North gives more elaborated accounts of the finding by Mr. Geo. Sharp of these rare nests, illustrations of which are also given.

In his interesting notes Mr. Sharp states:—"I had a surprise visit one day while at Evelyn from a collector who had been staying at Atherton for some time, and who also was in quest of Tooth-billed and Newton's Bower-Bird's nests and eggs, but who had failed to locate either. I gave him one of the nests of the Tooth-billed Bower-Bird, and gave him instructions how and where to look for them. Later on he photographed my black boy, Norman, half-way up the tree in which the first nest of this species was found, and then I took him out to the bower of Newton's Bower-Bird, which he had hitherto never seen, and, after our felling trees to obtain a good light, he photographed it with a group of my boys in the background."

It was natural and kind of Mr. Sharp to assist a brother naturalist in the field of exploration, but there was not the slightest necessity for either Mr. Sharp or Mr. North to suppress his name, as he was a well-known Sydney collector and field naturalist—Mr. S. W. Jackson. Moreover, it was well known that Mr. Jackson was in the northern scrubs specially in the interests of Mr. H. L. White, Belltrees, Scone, N.S.W. Mr. White has been good enough to place the whole of Mr. Jackson's valuable notes and photographs at the disposal of the A.O.U. These will appear as a special number of *The Emu*, which will immediately follow this issue, and will form part v. of the present volume.

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THE WHITE-EYE IN NEW ZEALAND.—The following notes by Mr. J. Drummond, of Christchurch, which, under the heading "An Australian Settler in New Zealand," appeared in the English *Field* of 19th December last, will be read with interest:—

"Fifty-three years ago a little olive, grey, and yellow bird, with white 'spectacles,' which is now quite common in New Zealand, was unknown to either Europeans or Moaris. In the winter of 1856 the lighthouse-keeper on Dog Island, in Foveaux Strait, which separates Stewart Island from the South Island of New Zealand, found one morning in the gallery of the lighthouse towers scores of these birds lying dead. They had arrived in the night, or early in the morning before the lights were extinguished, and had dashed against the lantern. They had come from Australia, and, flying day and night without finding a resting place, had crossed 1,000 miles of ocean before sighting New Zealand's shores. Members of the flock that survived the dangers of the voyage settled in the southern part of New Zealand, and ever since have occupied an honourable place in New Zealand's avifauna. For several years these little birds remained in the southern district of the Dominion, but gradually spread towards the north, until they were to be found in all parts of the South Island. Although they had involuntarily crossed 1,000 miles of water in the Tasman Sea, they hesitated before crossing 20 or 30 miles of water in Cook Strait, which separates the South Island from the North. At first they crossed in small numbers, again retired to the south, and eventually advanced in force. Their arrival was recorded simultaneously by a Maori mailman at Waikanae, a small coastal village in Wellington province, and by Sir Walter Buller, author of 'A History of the Birds of New Zealand,' in Wellington city. They flocked through the northern provinces to Wanganui, Taranaki, Hawke's Bay, Poverty Bay, and Auckland, making friends with the native resident birds, and also with those which had been imported from England, wandering to the remotest outskirts of the Dominion in the Chatham, Auckland, the Snares, and Campbell Islands. New Zealanders have given this little bird a number of popular names. It is the 'White-eye,' 'Silver-eye,' 'Ring-eye,' 'Wax-eye,' the 'Blight-Bird,' and the 'Winter Migrant.' The Maoris call it 'Tau-hou,' which means 'stranger,' and scientists know it in New Zealand, as well as in Australia, as *Zosterops* (i.e., girdle-eye) *caerulescens*. The genus *Zosterops* ranges over a large part of the world, commencing in Africa south of the Sahara, and extending to Madagascar, the Indian Peninsula, Ceylon, the Burmese countries, the whole of China, Japan, Formosa, the Malayan Peninsula and islands, New Guinea, the islands of the Pacific, and Australia and New Zealand. There are no fewer than eighty-five species in the genus, and one of these (*caerulescens*) is the species which belongs to Australia, and which, following a remarkable and mysterious impulse, has settled in New Zealand. When New Zealand colonists in the 'early days,' as they like to call them, decided the question whether the 'White-eye' was indigenous or a

visitor from some distant country, they agreed that it should be given a welcome, partly because it did not shun civilisation, like some of the native birds, and partly because its presence gave an additional charm to the sylvan scenes wherein it was to be found. Before long they began to regard it as a nuisance. Invading their orchards, though insectivorous, it pecked the plums, cherries, and apples unwarrantably. Its romantic arrival was regarded as a curse rather than a blessing. Presently, however, the landowners changed their opinion. Their apple trees were attacked by the American blight (*Schizoneura lanigera*), and the 'White-eye' dealt with this pest so thoroughly and effectively that it completely cleared many orchards, and left them clean and sweet. Since then it has been treated almost with affection. In recognition of its excellent work in this direction it is now known as the 'Blight-Bird.' At one time public feeling was so strong against it that a crusade was organized for its destruction; but now it is allowed to live without molestation. Although not protected by law in New Zealand, it is not rare. Its greatest enemies are the Maoris, whose custom was to preserve large numbers of 'White-eyes' in fat every year as a supply of food. The bird is so small that the Marois gave it no further preparation than plucking the feathers. Head, bones, feet, and all were eaten. It is, nevertheless, now firmly established as a New Zealand bird, and is both ornamental and useful. Most New Zealanders gladly allow it such fruit as it takes in return for its pleasant company and for the quantity of blight that it destroys."

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## Reviews.

["A Monograph of the Petrels (Order Tubinares)." By F. Du Cane Godman, D.C.L., F.R.S., &c.]

PREVIOUS notices of this classical work have appeared in *The Emu*, vol. vi., p. 205, and vol. viii., p. 45. The reviewers now have pleasure in acknowledging part iii. of the "Monograph," which upholds the excellence of its preceding parts. The following Australasian birds are dealt with in part iii., namely:—*Priocella glacialisoides*, *Priofinus cinereus*, *Majaqueus æquinoctialis*, *M. parkinsoni*, *Æstrelata macroptera*, *Æ. lessoni*, *Æ. rostrata*, *Æ. mollis*, *Æ. solandri*, *Æ. neglecta*, *Æ. incerta*, and *Æ. brevipes*.

No doubt, through the efforts of Mr. Tom Iredale and his enterprising party, who were camped on the Kermadec Islands for the most part of last year, much information will be added to the life-history of the *Æ. nigripennis* (Kermadec Fulmar), *Æ. cervicalis* (Sunday Island Fulmar), and *Æ. neglecta* (Phillip Fulmar), with its perplexing phases of plumage. Regarding

*Æ. mollis*, a frequenter of southern seas, chiefly between south latitudes  $20^{\circ}$  to  $50^{\circ}$ , can it really be the species which the Messrs. Layard found breeding "in burrows in great numbers about the summit of Mont Moea, in New Caledonia"? Comer, the collector, is supposed to have secured an egg referable to this species when on the far-south island, Gough. Is the same species likely to be found breeding within the tropics as well as within the temperate zone? While on the subject of breeding-places, it would have been interesting had Dr. Godman mentioned, in connection with *Priofinus cinereus* (Great Grey or Brown Petrel), Macquarie Island, where this fine bird was observed by Mr. J. Burton for several seasons (see "Nests and Eggs," Campbell, p. 896).

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[“The Birds of North and Middle America.” By Robert Ridgway.]

IN continuance of the acknowledgment of this famous work (*vide Emu*, vol. v., p. 99), part iv. has been received. It contains the following families, namely:—*Turdidæ*—Thrushes; *Zeledoniidæ*—Wren-Thrushes; *Mimidæ*—Mocking-Birds; *Sturnidæ*—Starlings; *Ploceidæ*—Weaver-Birds; *Alaudidæ*—Larks; *Oxyruncidæ*—Sharpbills; *Tyrannidæ*—Tyrant Flycatchers; *Pipridæ*—Manakins; and *Cotingidæ*—Chatterers.

In the four volumes published there have been described no less than 1,675 species and sub-species, or somewhat more than half the total number of North and Middle American birds. It is sincerely hoped that the indomitable author will be spared to see the completion of this great "Bulletin" of the United States National Museum.

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[“The Kea: a New Zealand Problem.” By George R. Marriner, F.R.M.S., Mem. Aust. O.U., Curator Public Museum, Wanganui, N.Z., late Assistant in Biology, Canterbury College, Christchurch, N.Z. Marriner Bros. and Co., Christchurch, 1908.]

NEW Zealand possesses many peculiar forms of bird-life, not the least interesting among them being the subject of Mr. Marriner's excellent monograph, the Kea (*Nestor notabilis*), the notorious sheep-killing Parrot. The author has spared no pains to make himself acquainted with the whole story of the Kea, and he has presented it to his readers in very attractive form. Although this bird was first discovered in 1856, it was not until some 12 years later that it was first suspected of attacking sheep. Its natural food consisted of berries, seeds, roots, honey, grubs, and insects. Various theories have been advanced to account for its remarkable change of diet, but the most feasible appears to be that it first acquired a taste for flesh by pecking at the carcasses

of sheep hanging at the slaughtering-places on the sheep-stations, and tearing off the scraps of flesh and fat adhering to the skins thrown on the fences to dry. From that to attacking the living animals when these were half-buried in snow and unable to resist, the transition was easy. For forty years the bird has been banned, with a price on its head (varying from 2s. 6d. to 10s.), and at first, while the birds were plentiful, station hands carried firearms and destroyed large numbers, the rewards making a substantial addition to their ordinary earnings. Afterwards, as they became less numerous, men were employed specially to hunt them. Mr. Marriner, in search of information, visited the "Kea country"—the region of the snow-clad mountains of the South Island—and in addition was assisted by numerous correspondents located in the area inhabited by the birds. The evidence was carefully sifted, and the author, while believing that the depredations of the Kea, like those of most outlaws, were greatly exaggerated, says :—"I think I am justified in saying that, as far as human evidence can be relied on, I have conclusively proved that the Kea has not only taken to meat-eating, but that it does actually attack and kill sheep." Not all the birds, however, appear to take part in the killing. Mr. Marriner compares the culprits to the man-eating tigers, declaring that a few old birds usually kill the sheep, while the others join in the feast. Their attacks are usually made at night or in the early morning, and the mode seems to vary but little. Jumping on the animal's back, generally on the rump, where they appear best able to retain their hold, they first pull out the wool, then tear the skin and flesh, continuing the attack until the sheep either falls exhausted, or, rushing frantically about in a usually vain effort to dislodge its tormentor, it falls over a precipice and is killed, in which case the bird lets go its hold when the animal begins to fall, but follows it to enjoy its ill-gotten meal. Sometimes making its escape after being cruelly lacerated, the victim suffers from a festering sore, and finally succumbs to blood-poisoning. Although animals other than sheep are rarely interfered with, instances are reported of attacks on horses, dogs, and rabbits, and in one case the body of a man who had met his death by accident was mutilated by the birds. The Kea breeds in winter, nesting in crevices of rocks, the white eggs (as many as four have been found in a nest) being deposited on a small quantity of tussock-grass sometimes 6 feet distant from the entrance. That the birds are still common in the mountainous parts of the South Island the author attributes to the fact that their nests are very difficult to reach. Apart from its scientific interest, as a sportive, inquisitive bird—it is even said to indulge in occasional practical jokes—it has such diverting ways that its extermination should be guarded against, and this perhaps could be most easily done



by adopting Mr. Marriner's suggestion to provide a home for it on one of the outlying islands, where it could do no harm, and where circumstances might compel its return to the "simple life." The book is well printed on good paper, and the illustrations, though for the most part small, are numerous and well executed. It may be purchased for 10s. 6d.

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### Notes and Notices.

TASMANIAN FIELD NATURALISTS' CLUB proposes holding an Easter camp-out on Freycinet Peninsula and Schouten Island, East Coast, to which members of the A.O.U. have been kindly invited.

EXPEDITION TO BASS STRAIT.—Referring to this account (pp. 195-207), Mr. A. H. E. Mattingley has prepared a "Photographic Souvenir" of the trip, containing 100 choice half-tone reproductions, depicting incidents, sights, and scenery of the Strait. The album, which is handsomely got up, may be obtained by members and friends of the expedition on application to Mr. Mattingley. Price, 22s. 6d.

"AN EXCITING EMU DRIVE—490 BIRDS KILLED!"—Such is the awful heading in a recent number of *The Pastoralists' Review*. It gave an account which appeared in the *Goondiwindi Argus* of a shameful slaughter of noble and defenceless birds in Queensland. Because they spread "the cursed prickly pear," forsooth! Emus did not introduce the prickly pear into Australia. But what are the authorities doing in Queensland by allowing the destruction of Emus, which are supposed to enjoy protection under the Game Laws?

AMERICAN MUSEUM OF NATURAL HISTORY.—The "Gallery of the Habitat Groups of Birds" was opened with great *eclat* on Thursday, 25th February, when President Henry F. Osborn and Mr. John L. Cadwalader entertained visitors to afternoon tea.

MR. TOM CARTER, M.B.O.U., of Broome Hill, W.A., after a brief visit with his family to the eastern States, has left by the s.s. *Medic* for England. Mr. Carter hopes to return to Australia within two years.

A MEMBER OF THE A.O.U. HONOURED.—Mr. A. H. E. Mattingley, recently hon. secretary of the A.O.U., has been elected an Honorary Fellow of the Royal Society for the Protection of Birds. This influential society has for its president Her Grace the Countess of Portland, while the vice-president is the Earl of Stamford.

IMPORTATION OF BIRD PLUMAGE AND SKINS.—The following proclamation appeared in the *Commonwealth Gazette* of 31st October, 1908:—"Whereas by the *Customs Act* 1901 it is enacted that all goods the importation of which may be prohibited by proclamation are prohibited imports, and that the power of prohibiting the importation of goods shall authorize prohibition subject to any specified condition or restriction, and that goods imported contrary to such condition or restriction shall be prohibited imports: And whereas it is desirable to prohibit the importation into the Commonwealth of the plumage and skins of non-edible birds in cases where the exportation thereof is prohibited in any country in which the particular birds are indigenous or have been acclimatized: Now therefore I, William Humble, Earl of Dudley, the Governor-General aforesaid, acting with the advice of the Federal Executive Council, do hereby proclaim that, whenever the Governor-General, by notification in the *Gazette*, notifies that the exportation of the plumage or skins of any specified non-edible bird is prohibited in any specified country in which that bird is indigenous or has been acclimatized, the importation into the Commonwealth of the plumage and skins of the bird specified in the notification shall be prohibited, unless in any particular case it is proved to the satisfaction of the Comptroller-General of Customs that the plumage or skins were exported from the country specified in the notification before the exportation thereof was prohibited, or that the plumage or skins were imported from and were the produce of some country from which the exportation thereof was not prohibited, or unless the Comptroller-General is satisfied that the plumage or skins were imported for educational or scientific purposes."

# MINUTES OF CONFERENCE OF STATE GOVERNMENT REPRESENTATIVES ON BIRD PROTECTION.

OPENED AT BOARD ROOM, LANDS DEPARTMENT, MEL-  
BOURNE, ON 19TH NOVEMBER, 1908.

## PRESENT :

|                   |     |                                                        |
|-------------------|-----|--------------------------------------------------------|
| Western Australia | ... | Right Hon. Sir John Forrest, P.C.,<br>G.C.M.G., M.H.R. |
| Queensland        | ... | Mr. E. W. Archer, M.H.R.                               |
| South Australia   | ... | Mr. J. W. Mellor.                                      |
| Tasmania          | ... | Mr. A. L. Butler.                                      |
| Victoria          | ... | Mr. C. W. Maclean.                                     |

The Hon. D. E. McBryde, M.L.C., Commissioner of Public Works, and Administrator of the Game Acts in Victoria, welcomed the representatives.

## BUSINESS.

On the motion of Mr. Mellor (South Australia) and Mr. Butler (Tasmania), Mr. Maclean (Victoria) was elected Chairman of the Conference.

After a conversational discussion of the Articles, as submitted by the Australian Ornithologists' Union as a guide to the business of the Conference, it was decided to adjourn till 10 a.m. next day.

FRIDAY, 20TH NOVEMBER, 1908.

*All Members present.*

Telegram from New South Wales Government to the effect that the "Chief Secretary considers no appointment necessary on behalf of this State at Conference *re* Game Laws," was read and received.

Letter from Launcelot Harrison, New South Wales, giving information concerning the Game Laws of that State, and the manner of administration, was also read and received.

Article 1. Mr. Mellor (South Australia) moved that, as in all civilized countries it is an accepted axiom that insectivorous birds, taken in connexion with agriculture in the broad sense, and forestry, are a national asset, this Conference affirms that the proper protection of the useful birds of the Commonwealth is of far-reaching importance. Mr. A. L. Butler (Tasmania) seconded the motion, which was carried unanimously.

2. Mr. Maclean (Victoria) moved that this Conference thinks it desirable that the Commonwealth Ministry should, as soon as possible, introduce legislative measures in the interests of the protection of bird life, to supplement the existing State laws so far as concerns the export of plumes, emu eggs, &c. Seconded by Mr. Butler (Tasmania), and carried unanimously.

3. That in connexion with No. 2, the Secretary of the (proposed) Federal Department of Agriculture (or, for the time being, the Secretary of the Department of Home Affairs) to be authorized to adopt such measures as may be necessary to carry out the purposes of such an Act, and to make and publish all needful rules and regulations for carrying out the same. Adopted without discussion.

4. Mr. Archer (Queensland) moved that reciprocity be urged in the direction that each State undertakes the watching of the importation of protected birds from adjoining States during the close season thereof by the appointment of inspectors for that purpose. Seconded by Mr. Butler (Tasmania), and carried unanimously.

5. Mr. Butler (Tasmania) moved that in each State of the Commonwealth the onus of proof of protected birds having been brought from, or into, any other State should be on the person having such game in possession after one week following the commencement of the close season for such game. Seconded by Mr. Mellor (South Australia), and carried.

6. Mr. Butler (Tasmania) moved that in consideration of the increased number of birds destroyed, it is to the interest of the conservation of birds that each Sunday should be proclaimed by the Government of each State a close season within a defined radius around each town. Seconded by Mr. Maclean (Victoria), and carried.

7. Mr. Archer (Queensland) moved that it be a recommendation to each State that it is desirable that a "bird" day be added to "arbor" day, to be observed in the State and Secondary Schools for the promotion of the spirit of protection of birds and trees; also that Proclamations regarding game preservation should be posted at all post offices, police stations, railway stations, and all schools throughout each State. Seconded by Mr. Mellor (South Australia), and carried.

8. Mr. Archer (Queensland) moved that each member of the Conference obtain copies of the resolutions and proceedings, and endeavour to get the recommendations carried out. Seconded by Sir John Forrest (Western Australia), and carried.

9. Mr. Archer (Queensland) moved that a Sub-Committee, consisting of Messrs. Maclean, Butler, and Mellor, assisted by Mr. Campbell, A.O.U., consider the different Acts, and report recommendations at next sitting of Conference. Seconded by Mr. Butler (Tasmania), and carried.

Conference adjourned at 12 noon till 10 a.m. on Saturday.

Sub-Committee met at 2.30 to consider Acts, &c.

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#### SATURDAY, 21ST NOVEMBER, 1908.

*Present* — All Delegates, with Messrs. Campbell, Mattingley, Le Souef, of A.O.U.

10. Mr. Maclean (Victoria) moved that in view of the acclimatization from older civilized countries of birds which have proved to have abnormally increased in numbers, and to be in many cases of doubtful utility to Australia, where valuable native birds have decreased, it is recommended that each State prevent the liberation therein of birds which are habitually wild in other countries, and that the Commonwealth Government be recommended to, as far as possible, check the importation of such birds, which may become additional pests. Seconded by Mr. Butler (Tasmania), and carried.





ralia), Rt. Hon. Sir JOHN FORREST, G.C.M.G. (Western Australia), T. DIMELOW (Secretary), C. W. MACLEAN  
A. L. BUTLER (Tasmania), A. J. CAMPBELL, Col. Mem. B.O.U., C. L. BARRETT (*The Herald*).

Bird Protection.

t of Lands, Melbourne, November, 1908.)



*From left to right—D. LE SOUEF, C.M.Z.S., A. H. E. MATTINGLEY, C.M.Z.S., J. W. MELLOR (South Australia, Chairman), Hon. D. E. M'BRYDE, M.L.C., E. W. ARCHER, M.H.R. (Queensland), Shorthand Writer STOTT.*

Inter-State Conference on  
(Held in the Board Room, Department)





11. Mr. Maclean (Victoria) moved that for the conservation of birds each State be recommended to establish absolutely protected reserves on Crown lands, preferably near towns, whereon no shooting of protected birds is to be permitted throughout the whole of each year. Seconded by Mr. Mellor (South Australia), and carried.

Recommendations of the Sub-Committee were then read by the Secretary.

12. Mr. Mellor (South Australia) moved that the following list of birds, recommended by the Sub-Committee for protection for the whole year throughout the Commonwealth, be adopted:—

### LIST OF BIRDS FOR TOTAL PROTECTION.

(AS RECOMMENDED BY SUB-COMMITTEE.)

| Common Name.                                                                           | Scientific Family or Generic Name.                                                                                                                         | Species number for reference according to Gould's Handbook of the Birds of Australia (all inclusive). |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Barn Owls ... ..                                                                       | Strix ... ..                                                                                                                                               | 28 to 31                                                                                              |
| Nightjars and Frogmouths ...                                                           | Caprimulgidæ ... ..                                                                                                                                        | 38 to 50                                                                                              |
| Swallows and Martins ... ..                                                            | Hirundinidæ ... ..                                                                                                                                         | 53 to 57                                                                                              |
| Green Merops ... ..                                                                    | Merops ... ..                                                                                                                                              | 58                                                                                                    |
| Dollar-Bird ... ..                                                                     | Eurystomus ... ..                                                                                                                                          | 59                                                                                                    |
| Kingfishers of all Species ...                                                         | Alcedinidæ ... ..                                                                                                                                          | 60 to 72                                                                                              |
| Wood Swallows ... ..                                                                   | Artamidæ ... ..                                                                                                                                            | 73 to 80                                                                                              |
| Diamond Birds ... ..                                                                   | Pardalotus ... ..                                                                                                                                          | 81 to 87                                                                                              |
| Magpies ... ..                                                                         | Gymnorhina ... ..                                                                                                                                          | 92 to 94                                                                                              |
| Magpie Larks ... ..                                                                    | Grallina ... ..                                                                                                                                            | 102                                                                                                   |
| Cuckoo Shrikes, thick-heads;<br>Shrike Tits, Bell-birds and<br>Thrushes of all Species | Campephaginæ Cinclosoma,<br>and Oreocincla                                                                                                                 | 103 to 131<br>271 to 275                                                                              |
| Fantails, Flycatchers, and Fly-<br>eaters, all Species                                 | Muscicapidæ ... ..                                                                                                                                         | 134 to 162                                                                                            |
| Robins of all Species... ..                                                            | Saxicolidæ ... ..                                                                                                                                          | 163 to 178                                                                                            |
| Lyre Birds ... ..                                                                      | Menuridæ ... ..                                                                                                                                            | 179 to 181                                                                                            |
| Coachwhip Birds ... ..                                                                 | Psophodes ... ..                                                                                                                                           | 182 to 183                                                                                            |
| Superb Warblers, Emu Wrens,<br>Warblers and Wrens of all<br>Species                    | Malurus, Amytis, Stipiturus<br>Sphenura, Atrichia, Cisticola,<br>Hylacola, Sericornis, Origma, Calamanthus,<br>Chthonicola,<br>Sphenæacus, and Calamoherpe | 185 to 189<br>236 to 239<br>244 to 247                                                                |
| Tits of all Species ... ..                                                             | Acanthiza and Geobasilæus                                                                                                                                  | 220 to 230                                                                                            |
| Chats of all Species ... ..                                                            | Ephthianura ... ..                                                                                                                                         | 131 to 133                                                                                            |
| Pipits and Larks of all Species                                                        | Motacollidæ ... ..                                                                                                                                         | 240 to 243, and 248                                                                                   |
| Pittas of all Species ... ..                                                           | Pittadæ... ..                                                                                                                                              | 269 to 270                                                                                            |
| Rifle Birds of all Species ...                                                         | Ptilorhis ... ..                                                                                                                                           | 363 to 365                                                                                            |
| Tree Creepers ... ..                                                                   | Climacteris ... ..                                                                                                                                         | 366 to 371                                                                                            |
| Sittellas or Tree Runners ...                                                          | Sittinæ ... ..                                                                                                                                             | 373 to 376                                                                                            |
| Cuckoos of all Species ... ..                                                          | Cuculindæ ... ..                                                                                                                                           | 377 to 387                                                                                            |
| Coucals or Swamp Pheasants ...                                                         | Centropodinæ ... ..                                                                                                                                        | 388                                                                                                   |
| Black Cockatoos of all Species                                                         | Cacatuidæ ... ..                                                                                                                                           | 397 to 404                                                                                            |
| Ground or Swamp Parrots ...                                                            | Pezoporus, and Geopsittacus                                                                                                                                | 441 to 442                                                                                            |
| Emus and Cassowaries ... ..                                                            | Dromæidæ, and Casuariidæ                                                                                                                                   | 492 to 494                                                                                            |
| Scrub Curlews, or Stone Plovers                                                        | Edicnemidæ ... ..                                                                                                                                          | 496 to 497                                                                                            |
| Ibis and Spoonbills ... ..                                                             | Ptalaleidæ ... ..                                                                                                                                          | 538 to 542                                                                                            |
| Cranes, Herons, and Bitterns,<br>all Species                                           | Ardeidæ ... ..                                                                                                                                             | 543 to 562                                                                                            |

Seconded by Mr. Butler (Tasmania) and carried.

13. Mr. Butler (Tasmania) moved that the following recommendations of the Sub-Committee be adopted:—

1. That regulations be made for scheduling birds to be protected, as well as birds which are not to be protected. Also regulations for the issue of licences to take birds or eggs for

scientific purposes, limiting the time, species, and number of birds or eggs to be taken, and prohibiting the taking of them within protected reserves or sanctuaries.

2. That the schedule of birds should include the common name, scientific family, or generic name, and a species number from Gould's Handbook to the *Birds of Australia*.
3. That punt guns should be clearly defined as to weight and bore, and it should be made an offence to have such a gun, or parts thereof, in possession under any circumstances.
4. That any officer authorized, or member of the police force, may, with or without warrant, at all times during business hours enter any open shop, and the premises tenanted therewith, or any factory, or any licensed public house, or any premises of or connected with any factory or licensed public house, or any tent, vehicle, or boat, or may search any person or persons carrying a gun or guns, or accompanied by any dog or dogs, or may search any parcel, bag, or other receptacle that such person or persons may have, in which he has reason to believe he will find any game, or native game, or any eggs, flesh, skin, feathers, or any part of any game, or native game, which any person may have in his possession contrary to any provisions of the Game Acts, and such officer or member may seize and take possession of such game, native game, eggs, flesh, skin, feathers, or part, and anything so taken possession of shall be destroyed, or otherwise disposed of in such manner as the officer administering such Acts may direct.
5. That the use of firearms for sporting purposes be limited to persons over sixteen years of age, who hold a gun licence, which should be issued upon payment of a suitable fee, and with instructions that shooting of protected or unprotected game is not allowed on Sundays within a prescribed area, nor within any protected area.

Seconded by Mr. Archer (Queensland), and carried.

14. Mr. Maclean (Victoria) moved that, owing to this Conference being unable to prepare a complete "Model Bird Protection Bill," through the impossibility of dictating how each State should legislate, in detail, and owing to the constitutional relations between the Commonwealth and the States, no such Bill, as was intended, will be prepared; but, instead, the series of recommendations resolved upon be submitted to each State for favorable consideration for the protection of birds. Seconded by Mr. Mellor (South Australia), and carried.

15. Mr. Archer (Queensland) moved that a vote of thanks be conveyed to the Lands Department for the use of the Board Room, to the Agricultural Department for the loan of the cases of birds, also to Mr. Maclean (Victoria) for presiding at Conference. Seconded by Mr. Mellor (South Australia), and carried.

Conference closed at 11.30 a.m.

C. W. MACLEAN,  
Chairman.

T. DIMELow,  
Secretary.

# AUSTRALASIAN ORNITHOLOGISTS' UNION.

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Their Royal Highnesses the Prince and Princess of Wales.

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MR. A. L. BUTLER (Tasmania), MR. E. F. STEAD (New Zealand).

## OBJECTS, &c. - - -



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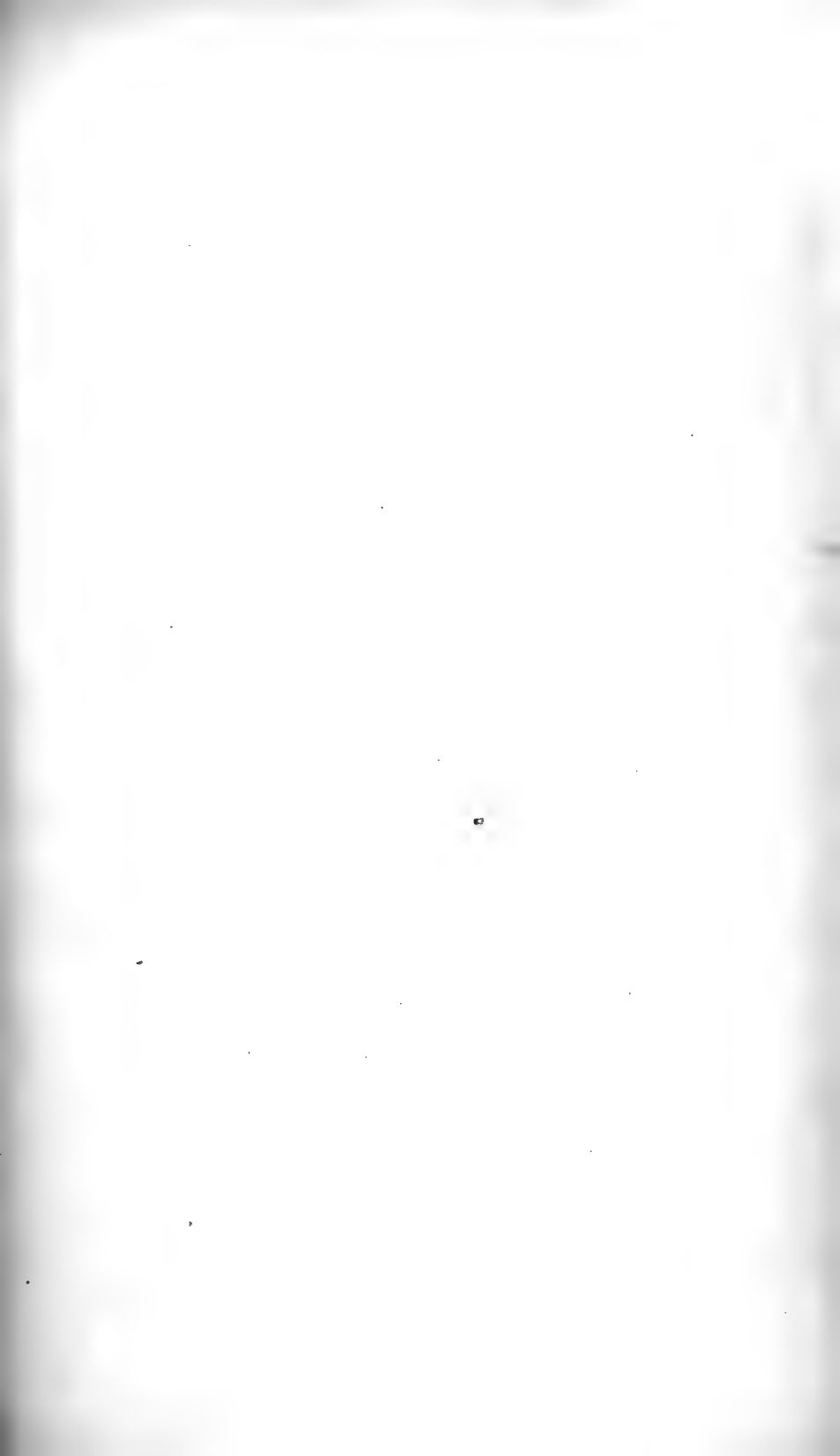
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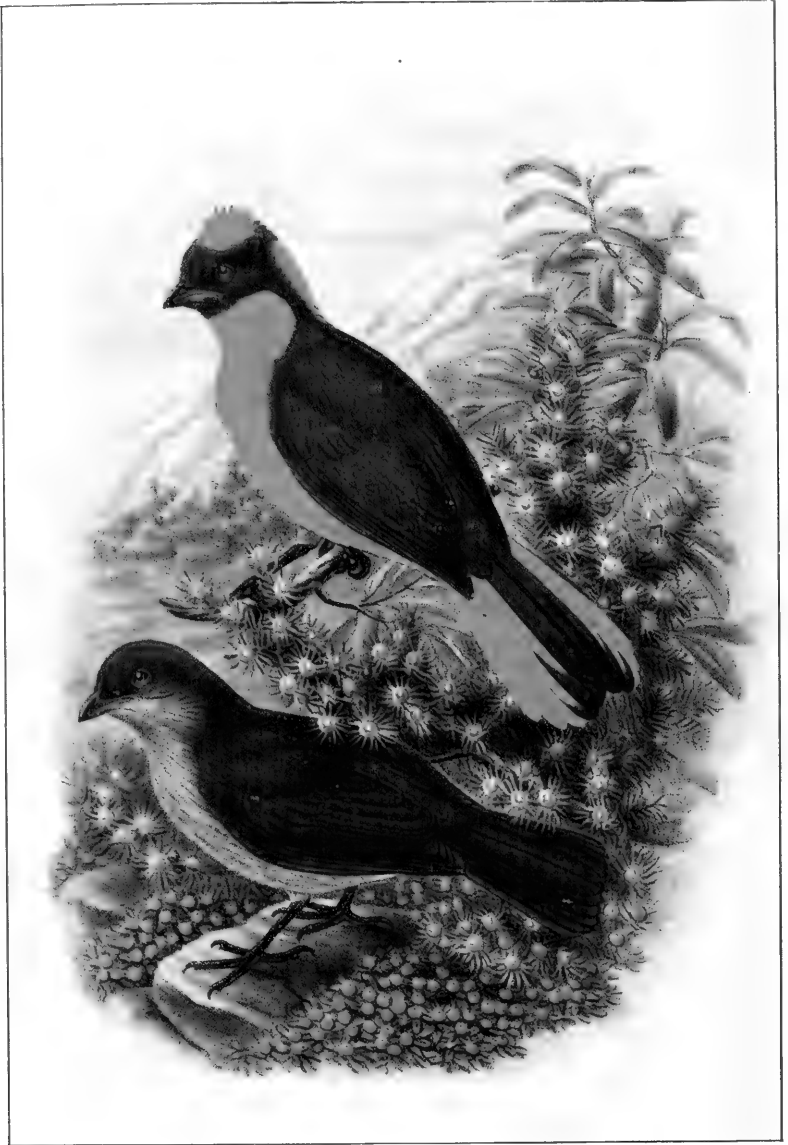
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Golden Bower-Bird (*Prionodura newtoniana*, De Vis)

(After GOULD SHARPE.)



# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. VIII.]

1ST JUNE, 1909.

[PART 5 (EXTRA).]

## In the Barron River Valley, North Queensland.

BY SIDNEY WM. JACKSON, A.O.U., CHATSWOOD, NEW SOUTH WALES.

FIELD OBSERVATIONS IN THE TINAROO AND ATHERTON SCRUBS,  
WITH PHOTOGRAPHS\* BY THE AUTHOR.

DURING many years of laborious but delightful study of bird-life in Australia, I often turned a longing eye in the direction of the luxuriant tropical scrubs of Northern Queensland, as offering a splendid field for ornithological research. Moreover, apart from the general attractions which would draw the bird-lover to the elevated scrub-lands of the far north, there was a very special object which attracted me like a magnet, and that was the desire to study, and to collect particulars of the haunts and habits of, the Tooth-billed Bower-Bird (*Scenopæetes dentirostris*, Ramsay), which is known by repute to most bird students as a feature of the region referred to. Other naturalists had visited the locality with the same object, but had so far failed to secure the nest and eggs of this most interesting bird. My own experience among other rare scrub-birds had, however, prompted me with a confidence that I could perhaps remove this matter from the sphere of mystery, and give to brother ornithologists definite data on the subject—an important one. I might also be able to find the nest and eggs of the Golden Bower-Bird (*Prionodura newtoniana*, De Vis), thus gaining information regarding the two remaining species of the Bower-Bird family of the nidification of which full particulars had not yet been recorded.

The long-wished-for opportunity came at last. At the express wish of Mr. Henry L. White, of Belltrees, Scone, New South Wales, an enthusiastic oologist, I started from Sydney at the end of May, 1908, thoroughly equipped for an eight months' trip through the coastal districts of Queensland, with Cooktown as my most northern headquarters, thus commanding touch with the best of the tropical scrub of the northern State. Right at this point I am prompted to express my wonder that the fast-

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nesses of our magnificent jungle-forests should be dubbed with so inappropriate a name as "scrub," a name which in itself seems ill-fitted to suggest the wild beauty of those dense primal forests; still, as it is the accepted term, one has to use it, but I often think that to those who have not seen an Australian tropical scrub the word must convey a mistaken impression, Be that as it may, I have, during my eight months' tour, visited all the best scrub-lands from the New South Wales border up to Cairns.

Details of my researches will appear, I hope, in subsequent issues of this journal. In the course of my wanderings I had some very rough experiences, but to relate them here would be beyond the province of this article. I only mention this as a caution to other naturalists that a working trip through the Queensland scrub-lands is in no sense a pleasure picnic.

Among the many places to which my work took me, the following localities may be mentioned, viz. :—Canungera pine scrubs, Tambourine Mountain, and Beaudesert (south-west of Brisbane); Eumundi and Cooran, in the Blackall Ranges (south of Gympie); Coolabunia and Kingaroy scrubs (south-west of Maryborough); Wongera scrub and Bundaberg, on the Burnett River; Colosseum Mountains and Miriam Vale (south-west of Gladstone); Mount Larcombe, Gladstone, Yarwun, Targinnie, and Raglan scrubs (all five in the Port Curtis district); Rockhampton, Duarina, Mackay, Finch-Hatton, Eton, also Eungella Mountains (of which the three last are west of Mackay); Bowen, Townsville, Lucinda Point, Ingham, Herbert River, Cardwell; Dunk Island, also Timanna, Kumboola, Bedarra, and other islands in Rockingham Bay; Goondi, Mourilyan, and Geraldton, on the Johnstone River; Cairns, Atherton, Tolga, Tinaroo, Evelyn, Herberton, Herberton Range, Cooktown, &c.

It was on the 25th September, 1908, that I arrived at Cairns; and, taking train from that place on the 2nd October, I entered the magnificent scrub-clad gorge that walls in the Barron River, passing the lovely falls so well known by the same name, then leaving beautiful Kuranda behind, and later Mareeba, I arrived late that night at Atherton, a long-looked-for goal.

The Atherton and Tinaroo scrubs lie about 70 miles south-west of Cairns and on an elevation reaching in places over 3,000 feet. Here, then, I was at last (yet for the first time) in the haunt of the Tooth-billed Bower-Bird, and the very first thing I heard from a friend was that another person, fired by the naturalist's inspiration, had only recently arrived in the district on the same quest as my own, having followed in my wake from Sydney several months after my departure. I lost no time in getting to work; in fact, despite late arrival and want of sleep, I was, in company with Mr. Quirk (district Crown Land

Ranger) and Mr. J. Fogarty, of Brisbane, *en route* at an early hour the next morning for the rich scrubs of Lake Eacham. This lake, by the way, though a small one, is of great depth, and of intensely blue appearance, but, strange to say, devoid of fish or any form of aquatic life; it lies on the mountain levels, about 15 miles south-east of Atherton, and is generally regarded as an extinct volcano. The tall scrub trees grow to the very water's edge. On our way we passed many large maize fields, and in the dense scrub on either hand I heard the notes of the Victoria Rifle-Bird (*Ptilorhis victoriæ*), and many others which, to me, were of uncommon type. At a place called Petersen's Creek we struck one of those delightful mountain springs apparently specially designed for the dusty and tired traveller. Here was a delicious flow of crystal-clear water, welling out at the very hill-crest, and right opposite was a huge parasitical scrub fig-tree 20 feet in diameter, with long aerial roots 'twixt earth and branches, resembling numberless ropes, of all thicknesses, whilst the road below and the surrounding ground were strewn with the fallen fruit, rich blue in colour, of the quandong tree. A brief rest in grateful shade refreshed us for what lay ahead. The narrow, winding way led us for a few hours through scrub tracks of indescribable beauty, until at last we reached Lake Eacham, and our work was in front of us.

The first step taken was to secure our horses in a temporary but strong yard of saplings. After lunch, and having fed the horses, we started on the real labour and pleasure of the day. My two friends, who had a gun, went east in search of Brush-Turkeys (*Catheturus lathamii*), whilst I took the opposite direction, as I had no desire to have my morning's work disturbed by gun-fire, or perchance my body perforated by a stray shot—a circumstance by no means impossible, owing to the denseness of the undergrowth and the inability of the shooter to see where the rest of the party was disposed. Every step in my first plunge into the dense jungle was full of keen interest. Quite early in the ramble, and whilst following an old cedar-getters' track, I met two blackfellows, who approached me in friendly way. Now was my chance of first-hand local information, so, summoning my best "pidgin" English, I questioned the dusky pair as to the Tooth-billed Bower-Bird, explaining by signs the bower-building habits of the bird, and the leaves which it places on the surface of its play-ground. At last I succeeded in making them understand, and they in turn told me by sign and sound that in their dialect the bird was known as "Cherrachelbo," but that they had never found its nest and eggs or heard of anyone else doing so; further, that they thought the nest was always built at a great height from the ground. I rejoiced their hearts with tobacco and matches, and continued my explorations in the same direction as before. Suddenly my

car was caught by a loud throaty note, like nothing I had ever heard before, and which can only be rendered in human language as resembling the word "chuck"; this was followed by an apparent outbreak of song from other song-birds, but in reality the whole performance was a mimicry solo by the Tooth-billed Bower-Bird, who was evidently having a little vaudeville show all to itself. In addition to all this, there was a complication of rasping sounds impossible to describe. Probably our friend was rehearsing some new effects, and finding it difficult to catch the right note. I halted instantly and waited listening for a quarter of an hour; then, having pretty well located the spot, I wended my way noiselessly in the direction of the sound, chalking the trees as I went. At last I sighted my quarry—he was a grey-plumaged bird, and his thrush-like breast was turned towards me, so that from my memory of preserved specimens, which I had recently examined in the Queensland Museum, I recognized the lonely vocalist as indeed a veritable Tooth-bill. It was sitting on a slanting stick about 18 inches above the ground, and, with its head well thrown back, was uttering a screeching, throaty note, varied at intervals by the loud "chuck," to which I have already referred. It was alone, so I got a splendid view of it before it flew away, and then, walking on to the spot, I made the first of my many interesting finds. The ground had been scratched perfectly clean and free of all dead leaves and *débris* for a space of 18 feet in circumference, and on this cleared patch there were placed eleven long, fresh green leaves, evidently plucked quite recently, and each lying upside down and separate from the rest. I looked carefully for a tree bearing the same leaves, but could find none anywhere near, so they had probably been brought some distance. They averaged 8 by 2½ inches, and were not of the glossy type, whilst their reverse sides were much lighter in colour, chiefly owing to the numerous veins which intersected them. These leaves were spread on the gently sloping bank of a densely-foliaged creek, and the peculiar "play-ground" was arched over to a height of about 3½ feet by a number of green and leafless vines, forming a sort of natural bower. The curled and partially withered leaves of the previous day's play were to be noticed cast outside the cleared area, together with older and still more withered ones. This, then, was the play-ground of the Tooth-billed Bower-Bird, and I ventured to believe that the object of the bird in placing the leaves face down was to prevent them (as long as possible) from curling, as is the habit of leaves, towards the upper side; this to my mind shows a foresight and artistic perception characteristic of all that one has ever heard of the Bower-Bird family; in fact, later, in November and December of 1908, in my camp in the Tinaroo scrubs, I proved my theory to a certain extent by experimenting in the shade





Tooth-billed Bower-Bird (*Scenopactes dentirostris*, Ramsay).

(After GOULD-SHARPE.)

with the same kind of leaves, when I found that, placed right side up, they soon curled out of shape and symmetry, whilst those which were reversed, in spite of extreme heat, remained flat for some time. Some ornithologists have thought the disposing of the leaves in this fashion to be due to an æsthetic preference on the bird's part for the softer colour of the under side of the leaf. This, of course, may be the case, but the other theory seems more feasible.

I followed the cedar track for a few miles past Lake Eacham, striking off into the dense scrub whenever I heard the now familiar note of the Tooth-bill, with the result that I discovered more play-grounds, each similarly placed, cleared, and decorated with leaves. These leaves, I was later on informed by Mr. J. H. Maiden, F.L.S., Government Botanist of New South Wales, belong to a scrub tree which is known as *Litsea dealbata*. Some of the play-grounds contained a much larger number of leaves—one, in fact, showing a total of 37—and in every instance save one the leaves were upside down, the solitary exception proving the rule, and being probably due to the bird being disturbed at its task, or even, perhaps, to a disturbing current of wind. It was also markedly notable in every case that only *one bird* was to be seen at each play-ground, and that on catching sight of the disturber of its solitude it would become silent, stretch out its neck, take a reconnaissance, and then flit swiftly away. It would generally return from 20 to 30 minutes after I had left, and appeared as mysteriously and silently as in many cases it had disappeared. I may mention that the play-ground containing the 37 leaves measured no less than 26 feet in circumference.

I never saw the birds perched in the trees, though of course in such dense foliage they might be there without being visible; still the fact remains that I never heard their note that day anywhere save at their play-grounds. It is also strange that these grounds are apparently frequented by only one bird, which will sit all day in seemingly self-satisfied contemplation of its artistic arrangements, and enlivening the solitude with a babble of harsh and unmusical sounds, with an occasional clear and beautiful reproduction of the notes of other scrub-birds; but each performance would be wound up with the recurrent and loud "*chuck*," which seemed to be a sort of "amen" to the whole affair. I have arrived at the opinion that the Tooth-billed Bower-Bird has in every instance its own especial ground, to which it can resort for play, or from which its call for a mate can be heard in insistent repetition; for, be it noted, these places are more numerous early in October, and just prior to what would be the breeding season, as I presume the birds pair and lay in November and December.

I noticed that the scrub was also frequented by the noisy

Black-headed Log-runner (*Orthonyx spaldingi*), nests of which I found in several places. They are large domed structures, about half the size of that of the Lyre-Bird (*Menura*), and were variously placed—some on the tops of stumps and on clumps of stag-horn and bird-nest ferns, on the sides of trees, whilst in two cases I found them in a mass of lawyer vines (*Calamus*), 9 feet from the ground. I also noted that a wide range of variety of Pigeons was to be found in the locality; also the Spotted Cat-Bird (*Elurædus maculosus*), a familiar object in these scrubs.

Five most interesting hours passed all too quickly in the luxuriant jungle of this locality, and, after a long, rough walk back to camp, I found my friends, Messrs. Quirk and Fogarty, had returned some time ahead of me. They, too, were full of their discovery of one of the Tooth-bill's play-grounds. Nothing would suffice but that I must share the find, so accordingly I was taken to see it, when I found that it furnished identically the same details as those of my morning's discoveries. The leaves were fresh, were of the same species, occupied the same face-down position, and numbered 29; the cleared patch measured 4 feet across, and was hooded over by a mass of leaning lawyer vines. Such was my day's work, which for a first visit to the haunts of this curious and unique bird was to my mind extremely satisfactory. We harnessed up our team and drove back through the deep shade of the arching greenery to Atherton, and as we went I could hear every now and then above the rattle of our wheels the notes both of the Victoria Rifle-Bird and of my new-found friend the Tooth-bill. At this stage it was discovered that Mr. Quirk had left his coat behind, hanging in a tree where we had camped, so, taking one of the horses out of the buggy, he rode back 2 miles and got it. In the meantime I went into the scrub exploring and finding more play-grounds of the Tooth-bill. On Mr. Quirk's return we started off again. All I wished was that his coat had been left further behind. After driving a while, I was unable to resist the challenge, and I got out here and there and hunted up more of the play-grounds, still further verifying my first observation that they were the haunt of one bird only, and that in most cases they were decorated with the same class of leaves, except in a few instances in which the bower was carpeted with long, narrow, and pointed leaves of the wild ginger plant, averaging a length of 15 inches by a width of 3 inches. Driving on, I noticed the ordinary wealth of wild fruits and vines, the scrub raspberries (*Rubus rosæfolius*) in particular growing thickly along the edges of the scrub, whilst the heavy and tall timbers were represented by splendid red cedar, kauri pine, crow's-foot elm, bean-tree, beech, quandong, silky oak, &c., all testifying to the richness of the district in its timber resources.







Young of Tooth-billed Bower-Bird (*Scelophaetes dentirostris*).  
First taken by S. W. Jackson and E. D. Frizelle, Tinaroo Scrubs, 5/12/08. (Half natural size.)

Some little time before we reached Atherton, I was thrown into a state of excitement by the discovery from the buggy of a nest in a scrub pandanus palm near the side of the road, which, as it was close to one of the play-grounds, seemed likely to be that of a Tooth-billed Bower-Bird. The nest resembled that of the Coachwhip-Bird (*Psophodes lateralis*), and was placed 5 feet up from the ground. I carefully marked the spot, but was destined never to determine the bird to whom the nest belonged, as it was evidently deserted when visited the next time. However, close by I was lucky enough to take my first nest and set of two eggs of the Bower Shrike-Thrush (*Collyriocincla bowveri*); this was built at about 18 feet from the ground, in the top of a small scrub tree, from which I flushed the bird as we drove by. After a very satisfactory day's work, we reached Atherton at about 7 p.m., our day's outing thus covering a full twelve hours.

My second day (4th October, 1908) dawned bright and full of delightful promise, and I started away with eagerness in the early hours. This time, however, I went alone and on foot, and made for the scrub-clad hills lying east of the township of Atherton, locally known as Halloran's Hill. As I passed through the adjacent partially-cleared lands I saw the Pale Flycatcher (*Micræca pallida*) hovering and fluttering with his characteristic flight, and making the forest musical with a sweet whistling note very similar to that of the common Brown Flycatcher (*Micræca fascians*) of southern Queensland and New South Wales, &c.

I took the eastern side of the road for my entry into the scrub, more by chance than by actual choice, for the now familiar note of the Tooth-bill was rising all around me in a perfect revelry of sound, and on hearing the distinctive "chuck" call, I turned cautious steps to the place it proceeded from and came upon the expected play-ground, finding, as before, that only one bird was flushed. They are difficult birds to get a good look at. Here the ground was very rough and stony, and the cleared area was consequently poor when viewed as a specimen, as the bird had no chance to lay the leaves in level symmetry. They were lying at all angles and slopes, with the result that the heat had partially curled them, but the unvarying shelter of massed lawyer vines was, as in former cases, again in evidence. The leaves numbered 39, and were similar to those found the day before near Lake Eacham. I have carefully collected and dried samples of these, and later on in this article will give the conclusions which I arrived at as accounting for the bird being provided with tooth-like serrations to the bill. I shall refer to this more fully when dealing with the investigations made during my camp in the scrubs at Tinaroo, in this same district.

Further on and across a stony creek, yet more play-grounds

were found, all showing exactly the same conditions, and in every instance only one bird being in possession of the ground; in some cases I noticed freshly broken scrub-snail shells (*Helix*) scattered about the edges of the play-grounds. The shape of the bird approximates to that of the Spotted Cat-Bird, though smaller in size, and, of course, quite distinct in colour, whilst its flight and movements are much swifter and more active. When engaged in what one must indulgently suppose it regards as its own especial song, the mouth is often opened to almost gaping width, and the head thrown well back—a feature often noticeable when the note is harsh and unmusical. Of course, as the colour of the bird is of a brown hue, harmonizing with the sombre shade of the scrub, it is rather difficult to pick it out at times. In my rambles to-day I only saw these birds at their play-grounds, and so far none perched in trees. In the morning I came across twelve more bowers or play-grounds (as usual with only one bird at each), all similarly located, and decorated with the same class of leaves, with three exceptions, in which the wild ginger plant leaves above referred to had been employed to satisfy the bird's taste. These latter measured from 15 to 18 inches long by  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches wide. In one bower I found over 40 of these, and some of the other kind as well.

The more I saw of the haunts of the Tooth-billed Bower-Bird the keener grew my desire to arrive at conclusions deduced from evidence, and to investigate the bird's mating, nesting, and breeding habits. Why, for instance, did it nearly always select one class of leaf with which to carpet its play-ground? Was there any connection between this habit and the tooth-like serration of the bill, which would apparently aid in the severance of the leaf-stems? For what reason was the play-ground occupied by only one bird, where was its mate in the meantime, and, above all, with so many birds about, where and of what sort was the nest? I felt almost certain that the birds did not quit the scrub to build, for it was hardly likely that they would use it as a haunt and then capriciously leave it for the important event of nesting; their regular habits argued against it, and the loving care lavished on their play-grounds, the daily rejection of the withered leaves and the re-carpeting with fresh ones, all pointed to the bird as having strong individual characteristics and local tastes. My task was difficult because the growth in the scrub is so luxuriant, and exploration was made more difficult by the dense tangle of lawyer vines (*Calamus*)—two varieties—with recurved spines, responsible for much rending of garments and exasperating abrasion of cuticle, not to mention attacks of pestering insects.

Emerging for a short space into clearer ground, I was rewarded by the sight of a splendid specimen of the Victoria Rifle-



Play-ground of the Tooth-billed Bower-Bird (*Scenopetes dentirostris*), Tamaroo Scrubs.  
(Observe feeding-stone on left, with remains of snail-shells (*Helix*.)



Bird (*Ptilorhis victoriæ*), which was perched on an upright stick about 4 feet from the ground. He was a handsome creature, a regular scrub aristocrat, and I spent something like an hour, motionless, watching him. Sooth to say he was almost as still as I, but not quite as silent, for every now and then he would open his bill widely and utter a long, harsh note, which I can only describe as a screeching or choking "Ya-a-s"; this performance was varied by a constant combing of his glossy plumage, and often, when rendering his cry, a quick movement of the wings, which were opened and arched forward, then slowly folded into position again. He had no looking-glass before him, yet I think he was fully conscious of his handsome personality. I was just congratulating myself over the conviction that the sitting female could not be far away, when he took flight suddenly in a flash of gleaming colour and with that peculiar soft, silk-rustling noise characteristic of the flight of his kind. He returned almost directly to his sentinel perch, thus still further impressing me with the idea of a nest close at hand. This deceptive conviction drove me to a stiff climb of several adjacent trees, but as I could neither see the female nor hear her call, I came to the conclusion that she was probably sitting not far away, but screened by the practically impenetrable tangle of undergrowth. Later I was again inclined to doubt this, as I heard another Rifle-Bird answer the call a long way off, and as the male bird is lazy and ungallant enough to let the female build the nest, while he takes the easier task of general watchman, I altered my opinion in the case, and reckoned that the bird I had watched was simply one of a newly-mated pair intent on house-building. I had noticed this peculiar division of labour on the part of the *Ptilorhis* during my visit to the north-east of New South Wales in 1899, and I think the same practice would probably mark the Queensland species. However, in order to waste no chances, I carefully marked the spot, in hopes of a later visit.

Whilst thus vainly looking for the Rifle-Bird's nest in the network of lawyer vines, I found three nests of the Little Green Pigeon (*Chalcophaps chrysochlora*), which were built on the springy bed formed by the massed vines and placed at a height of about 10 feet from the ground. One of them contained a solitary egg, which, as the clutch properly is two, I was loth to remove. Quite close by I had another but more exciting find—in the forked limb of a large-leaved stinging-tree, close to the trunk and about 9 feet up, I found a nest which looked somewhat like that of the Cat-Bird, though perhaps a little smaller. It was impossible to climb the tree itself, as one touch of leaf or stem is like a sear from a hot iron, so I scrambled up an adjoining tree and had a look in the nest from a higher vantage point. Alas for my hopes! it was

empty. Still, it looked new, and I considered it not unlikely to be the nest of the Tooth-billed Bower-Bird. The outside was composed of sticks and leaves, and the cup part was deep, well defined, and lined with fine roots, the inside measurement amounting to  $4\frac{1}{2}$  inches. Marking the spot, hoping for a subsequent visit, I resumed my inward journey, the growth getting thicker and thicker, and not 25 yards from the nest I found another play-ground; this made me still more hopeful that I had really lighted on the nest of the Tooth-bill, so I went back for another inspection. This time, after much twisting and stretching, I made out the unwelcome fact that there were spider-webs clinging to the inside, which at once classed it as either an old or an abandoned nest. Still the puzzle faced me, where do these queer birds build? Apparently they shun perching habits, preferring the solitude of their leaf-strewn floor to an arboreal existence; consequently it was more difficult to conduct observations, as the density of the undergrowth, compared with the higher levels of the greenery, made it extremely hard to keep an eye on the birds when once they moved their position. However, I consoled myself with the comfortable reflection that "to him who waits and works all things come." Naturally, while looking for one thing ardently, I found others of less absorbing interest. Amongst these were the nests of the Ashy-fronted Fly-Robin (*Heteromyias cinereifrons*), the Large-billed Scrub-Wren (*Sericornis magnirostris*), the Coach-whip-Bird (*Psophodes lateralis*), and others. As far as I could see, the exasperating lawyer vines partly justified their existence by offering the birds tempting building accommodation; in fact, most of the nests discovered were so located. As for my friends the Tooth-bills, I could hear their cries all day long as they sat in state each in its lonely play-ground. The peculiar "chuck" which I have described as their finishing note is not unlike the sound made by a carpenter's long trying-plane when used in a short, sharp stroke. On this particular day I was also able to approximate some of the notes (though a bit discordant) to those of the Striped Honey-eater (*Plectrohynchus lanceolatus*).

Amongst many points of general interest, I chanced upon the vine on which the larva of the giant atlas-moth (*Attacus atlas*) feeds. These are indeed "giant moths," the females measuring nearly a foot across the wings, and they have often been captured in the neighbourhood of Atherton, Tinaroo, and Cairns. I could not help thinking what some of my lepidoptera-loving friends would have given to be in the locality. Later in the day I was brought more closely into touch with another interesting denizen of the scrub, the Black-headed Log-runner (*Orthonyx spaldingi*). These are large compared with the southern species, known as the Spine-tailed Log-runner (*O. spinicauda*). As their name implies, their habit is running



more than flying, and they get over the ground, fallen timber, and rocks at an astonishing rate and with unwavering ease, and all the while keep up a croaking, frog-like note, difficult to translate into words, but often approximating to "*Chow-chilla, chow-chow, chow-chilla, chow-chow,*" which is oft repeated and audible at a considerable distance. The two nests I found were very interesting, being of dome-shaped design, built of sticks, and placed a few feet from the ground above the roots of the red cedars. This is a locality much affected by the birds, judging from the signs of scratching, and appeared thoroughly well worked as an habitual feeding ground.

Any person wishing to explore these scrubs needs to be a good bushman, possessed of a good bump of locality; in fact, if he does not possess these homely but useful qualifications he must be ready to spend the night in a maze of undergrowth with resignation, and then very likely in the morning find that he has been close to the homeward track all the time, or even near his actual camp. I have never yet been actually lost, although once or twice, as a certain humorous song puts it, I have been "very near it!" In the locality to which I have just referred I came across some more feathered friends; amongst which were the Pied Flycatcher (*Arses kaupi*), Ashy-fronted Fly-Robin, Bower Shrike-Thrush, Shining Calornis (*Calornis metallica*), and others.

The next day (5th October) I took a locality nearer camp, and explored the scrub near the township of Atherton and on the road to Tolga. The Tooth-billed Bower-Birds were not so plentiful here as on the higher levels, and I only found three play-grounds, one of which measured 10 feet by 4 at its widest, the leaves used for the decoration being of the same species as before described (*Litsea dealbata*), and in every case had been freshly plucked. The occupant of each play-ground was, as before, in absolute loneliness, and entertaining itself and its unknown listener with continuous mimicry, varied with its characteristic throaty call. It was not a pleasant day, for that devastating biped, man, was at work close by and taking advantage of the dry, hot weather to burn off the fallen scrub; hence an insidious pall of eye-smarting smoke permeated the scrub, to the intense discomfort of man and bird. It seems a pity that human progress appears to be inseparable from the destruction of Nature's greatest beauties. The Tooth-bills failed to disclose any fresh habits or characteristics likely to enlighten me on points in doubt. This day I did not see a single bird anywhere save in its own private studio, nor did I notice more than one at a time, and that one invariably upon the ground. I sat and watched them for hours, but they hung closely to their especial domain, and evidently did so in obedience to a strong instinct, either natural or local. The question was how should I arrive at the solution of this tantalizing puzzle? Certainly not

until I could later on either observe them during the mating season, or by good hap light upon evidences as yet undiscovered.

#### A VISIT TO DUNK ISLAND.

The following day (6th October) I started for Cairns, *en route* for Geraldton and Cardwell, which lie to the south of that place. On arriving by train at Cairns I was delighted to meet my friend and brother oologist, Mr. Dudley Le Souëf, of Melbourne, who was visiting North Queensland with an eye to health recuperation; and, as might be expected, we had a good time, comparing notes on various subjects of common interest, and the next day he saw me start in the s.s. *Kuranda* for Geraldton, on the Johnstone River, about 60 miles southward. After passing through there I went on to Cardwell, and then to Dunk and other islands in Rockingham Bay.

The coast here was a beautiful belt of scrub, and what was in one sense a perilous region. You can have good things, but you have to pay the price, and the price of enjoyment of and working in the beauties of some of these tropical scrubs is spelled in one nerve-racking word—"fever." But in a sense it is almost worth it. The scenery is absolutely unsurpassed in its luxuriant and rich beauty, and in addition to this the naturalist's eye is gratified by the sight of fresh birds and features new; it was, in fact, in this locality that I first came across several Cassowaries (*Casuarinus australis*), and their numerous traces of occupation were unmistakable evidence that they were not rare.

At 8 p.m. on 17th October, I was rowed from Cardwell into the bay in a small boat, and placed on the deck of a wooden barge, where I had to content myself standing in pouring rain without any shelter save an overcoat, which was soon wet through. After four hours of this experience the s.s. *Lass o' Gowrie* came alongside and picked me up, taking me on to Dunk Island, where Mr. E. J. Banfield met me with a boat at half-past 3 the following morning.\* I stayed at Dunk Island for a few days, being hospitably entertained at Mr. Banfield's beautiful island homestead. The tasteful design and the laying-out of this charming home, aided by Nature's handiwork, combine to make it an ideal place. The kindness I received from my good host and his wife will live in my memory for all time; no wonder that Lord and Lady Chelmsford took keen delight in the place during their recent visit. The whole island may be described as a paradise for anyone, but especially for a lover of Nature. I was just in time to see the White Nutmeg-Pigeons (*Myristicivora spilorrhoea*) in the height of their breeding season. They were there in thousands, the ground about being covered with tons of wild nutmegs which the birds had ejected after the red skin or mace had been digested. On the neigh-

\* Mr. Banfield has lately published an interesting book bearing on the nature-study of this salubrious island. A review will be found in this issue of *The Emu*.—EDS.

bouring island of Bedarra I found a clutch of Stone-Plover's eggs (*Burhinus grallarius*), a bird which is better known as the Land or Bush Curlew. It is curious that I found the eggs of this inland bird on the sand barely 3 feet above high tide mark—a circumstance distinctly unusual. The wealth of vegetation on these islands would highly delight the botanist, who would hardly know where to begin observing and collecting. Plants which in cooler climes are only known in hot-houses here flourish in wild luxuriance in the open. Amongst other things the lovely golden orchid (*Dendrobium undulatum*) grew in rank abundance on all these islands. I was much interested in finding the large nesting mounds of the Scrub-Fowl (*Megapodius duperreyi*). One of these measured 25 feet across at the base by a depth of over 8 feet and a top width of 9 feet. They were mostly located low down in the scrubs, close to the sea. Before leaving this subject I must record the fact that I saw Megapodes on Dunk Island flying from the scrub up into the very tallest of the big forest trees. On these islands I also saw several nests of the White-headed Osprey or Fish-Hawk (*Pandion leucocephalus*), from which the young birds had lately departed. The green tree-ant (*Ecophyllus smaragdina*) I found plentiful on these islands, and on the coast of North Queensland generally. While up at a nest of the Nutmeg-Pigeon in a mangrove-tree I got covered all over with these green insects, and received many bites from them. Their nest, which is about the size of a football, and placed in a tree, is composed of green leaves, which are all neatly fastened together with a white substance resembling cobweb. On the island of Kumboola I saw very large oysters (*Ostrea christi-galli*), growing loosely, one pair of shells weighing nearly four pounds. If space permitted I could profitably devote it to details of my visit to Rockingham Bay and the Johnstone, but I must not forget that this article is primarily to deal with the Atherton district and the habits and haunts of that puzzling anomaly the Tooth-billed Bower-Bird. Meanwhile word reached the captain of the s.s. *Kuranda*, at Townsville, to slow down opposite Dunk Island, and on the 19th of October, at the witching hour of midnight, I took leave of host and hostess, and was rowed across the dark waters of the bay to intercept the *Kuranda*, and returned north again.

We reached Cairns at about 2.30 p.m. on the following day (20th October), just in time for me to get to my bed with a smart attack of "Johnstone River fever," a companion unsought and undesirable, but the almost inevitable price of my wanderings in the moist, fever-stricken scrubs. It was not, in fact, until the 27th that the stern veto of the doctor was removed and I was permitted to resume my journey to Atherton. I was convalescent, still very weak. But the desire to get back to those baffling Tooth-bills was so strong that I had to get to Atherton somehow, even if I crawled.

## RETURN TO TINAROO SCRUBS.

On the 28th October I again reached Atherton by train, feeling much better for the change to the higher levels and cooler air. Mr. Quirk (local Crown Land Ranger) called on me, and made things easier by giving me the name of someone who could help me with useful local knowledge of the scrubs during my next tour of investigation. This was a Mr. E. D. Frizelle, who, being engaged in the timber industry, and having a camp about 12 miles away in the Tinaroo scrubs, would be the man of all others to aid me in my work. The 29th, therefore, found me, although still rather weak, at a place called Tolga, arranging for buggy transport to Mr. Frizelle's camp at Tinaroo, but I could not get under way until the next day. Tolga proved to be worth a little attention. It is a small township on the northern edge of the great sixty-mile belt of scrub, and is principally supported by the timber industry, which has natural resources of the richest character. I saw kauri pine logs here cut from the local scrubs which measured 22 feet in circumference; some are so large that the saw-millers are obliged to use explosives in order to blow them in halves and thus reduce their size, so that they will fit the stands at the mill. The day of enforced rest was, though unwelcome, perhaps the best for me; I felt better, but the call of the Tooth-bills, plainly heard at the edge of the scrub close to the township, made me eager to be off. I left for the Tinaroo scrubs on the 30th, and made an early and reluctant acquaintance with the local dust on the roads. Dust! It is of the deep red volcanic brand, and as I passed along I "saw red," and later in the day took on the same rich brick colour myself. Birds and everything else, animate and inanimate, were powdered over with the same fine, effective deposit. It was in truth a case of "local colouration." Fortunately, in the scrub there is no dust. The weather had been unusually dry, but the wet season would set in soon.

Mr. Frizelle met me on the bank of the Barron River, and, aided by him, I bestowed all my boxes and belongings and bush outfit in a tent, ready prepared for me, close to the all-absorbing scrub, and in a spot of wild picturesqueness. I did not take long to change into the light, strong wear which I keep for scrub wanderings, and with the zest of a schoolboy on a holiday I literally plunged into the heart of things—*i.e.*, the scrub. As I entered I came straight across three play-grounds of the Tooth-billed Bower-Bird, all decorated and all in possession of solitary occupants, as so often before described. The latter were amusing themselves with an absolutely perfect reproduction of the screeching notes of the Northern Blue-bellied Lorikeet (*Trichoglossus septentrionalis*), varying them with others now and then, and winding up with the inevitable and intermittent "chuck." I now noticed again that whenever these

birds took flight they vanished swiftly into the thickest of the vines and undergrowth, becoming instantly silent at the moment of flight; but I had no sooner returned to camp than I could hear them resuming their loud notes, and keeping them up until it was almost dark.

After supper we had a lounge and chat over birds, &c., until a late hour. I gave Mr. Frizelle all the information I could about the Tooth-billed Bower-Bird. Just before turning in to rest I heard the distinct note of the Large-tailed Nightjar (*Caprimulgus macrurus*); it was evidently close by, and the three repeated notes—"Chop-chop-chop"—sounded exactly like a caulking hammer when used on a ship's deck. Other night-bird noises joined in; among them could be heard the notes of the Koel (*Eudynamis cyanocephala*), mixed with the screech of the Powerful Owl (*Ninox strenua*); but at last even these failed to keep my drowsy eyes from sleep.

My work in the Tinaroo scrubs had now fairly commenced, and I looked forward to days crammed with interest and marked with success. On the morning of the 31st October a perfect revel of bird music served as a 5 o'clock *reveille*. All around stood the dense scrub—a frowning wall of green-topped timber—and from its depths came the notes of the Victoria Rifle-Bird, Spotted Cat-Bird, Black-faced Flycatcher (*Monarcha melanopsis*), Ashy-fronted Fly-Robin, Barred (Swainson) Cuckoo-Shrike (*Graucalus lineatus*), Bower Shrike-Thrush, Black-headed Log-runner, &c., all making merry melody. But as the sun rose higher the medley of sweet sounds gradually died away, and by 8 a.m. most of the feathered choir were silent. I resolved to be early at work, so by 5 o'clock I was again on the track of my elusive friends, the Tooth-bills. They are surely the industrious apprentices of the bush, for up to 6 a.m. they appeared to be hard at work clearing their bower floors of the old leaves and re-carpeting them with fresh ones, and until this early house-work was done they appeared to be in little mood for song or mimicry. I came across them hard at their re-furnishing, and carrying the long, heavy leaves in their bills *by the stems*, and just as they had severed them from the trees. Breakfast furnished a brief but welcome interlude, and then my companion and I skirted the scrub-walled banks of the Barron for some miles. The work was full of interest, but for some time barren of results, the Tooth-bills being simply found doing solitary sentry duty at their bowers as usual. We made a short cut across a small forest area in the scrub, known as Ziginbine Pocket, and in that somewhat clearer area we saw the Black-backed Magpie (*Gymnorhina tibicen*), Brown Shrike-Thrush (*Collyriocincla brunnea*), Pale Flycatcher (*Micræca pallida*), Drongo (*Chibia bracteata*), Black-shouldered Kite (*Elanus axillaris*), Whistling Eagle (*Haliastur sphenurus*),

Stalker Fig-Bird (*Sphecothebes stalkerii*), and others characteristic of forest or big timber lands.

With an eye to night comforts, we gathered material for bedding our bunks, and repaired to the camp for the mid-day meal. Although we had only homely fare—tea, damper, and salt beef—it greatly refreshed us. Then, after a restful pipe, we were again on the move, with the idea of getting a general knowledge of the locality, to ensure its being exhaustively worked during our camp in the Tinaroo. Whilst passing close to some huge kauri pines we got within sound of a Tooth-billed Bower-Bird, and sat still to listen, with a view to arriving at the range of its powers of mimicry. Certainly it gave us a great variety, reproducing with startling exactness the notes of the Drongo, the Forest Kingfisher (*Halcyon macleayi*), Northern Lorikeet, the Bower Shrike-Thrush, Black-headed Log-runner, Dollar-Bird or Roller, Barred Cuckoo-Shrike, and others; but his masterpiece of vocal conjuring was the imitation of the whirring rattle of a so-called locust or cicada when captured and held by a bird; so true to sound was it that we thought the Tooth-bill was treating himself to a hard-shell dinner of these noisy insects. Similarly this master mimic reproduced the distressed cry of a frog when caught by a bird, snake, &c.; truly he must have studied Nature's tragedies at close range, and meant to advertise to all how clever an actor he was. Buoyed by strong hopes of ultimate success, we tried persistently to achieve the as yet unrecorded discovery of the Tooth-bill's nest, but not only could not find it, but, save where the lonely sentinel had been scared into upward flight, could not even see one of the birds perch anywhere except on or close to the ground. With a keen eye for this, our longed-for objective, and at the same time keeping a corner of it for the nests of the Black-headed Log-runner, we wound and twisted throughout the thickets. The Victoria Rifle-Birds challenged our attention many times, and we watched one pair for some time, but they managed to vanish in the surrounding tangle. Following them, we came upon a recently felled kauri pine, and loaded ourselves with enough splittings for a camp table, and thus encumbered made for home. We were not altogether sorry when a Tooth-bill's call gave us excuse to put down our loads and creep cautiously through the scrub to the cleared play-ground, which was almost visible across an old timber track lying ahead. The bower was carpeted as usual, 15 long, fresh leaves of three kinds lying there in the now common reversed position. The bird seemed more than a little annoyed at the invasion of his privacy, and flew up into a tree and stayed there in sulky silence. It was just at this spot that we received a fillip of excitement in a discovery that at first promised well. In a mass of lawyer vines

trailing from the limbs of a small tree at a height of about 9 feet was a nest of most promising appearance. The question was whether it would prove the Mecca of our hunt. Climbing up an adjacent tree, I found on examination that it was new and bore a certain amount of resemblance to that of the Spotted Cat-Bird; it was large, and framed on the outside with many dead sticks, the inside being lined with large, brown dry leaves. We were somewhat excited over the find, as the Tooth-bill had vacated his play-ground with unusual and suspicious suddenness at our approach, and what added to our hopes was the fact that the nest faced the play-ground and was practically cut off by the vines from access in any other direction; moreover, from the edge of the play-ground to the nest itself was in a direct line not more than 12 feet. Surely we thought ourselves justified in a flattering hope that we had really struck good fortune this time. At any rate, to prove our anticipations as far as possible, we stayed there listening patiently in case the call of the Spotted Cat-Bird, or its arrival at the spot, would once more spell disappointment for us. In patient silence we waited, enduring absolute torture from the bites of the red scrub animalculæ (*Leptus*, sp.), irritating parasites that can give points to all ticks, sand-flies, and mosquitoes in the world. Finally we left the spot for the present, enjoying the pleasant hope that our find would prove to be the longed-for Tooth-bill's nest. To-day we saw a beautiful specimen of the Manucode (*Phonygama gouldi*)—like the Rifle-Bird, a Bird-of-Paradise.

The next morning (1st November) at the first glimpse of daylight we were up, my friend, Mr. Frizelle, working along the Barron River with the commendable object of getting some Ducks for the camp larder, whilst I made a bee-line for the nest which had aroused so much hopeful expectation the day before. Arriving at the spot, I could see the bird with serrated bill hard at work rejecting his yesterday's carpet and replacing it with fresh foliage. Through the field-glasses I watched him at his work, which he did very evenly, leaving 1 to 3 inches between the leaves all over the cleared space (seldom letting them overlap), which by later measurement proved to be 10 feet 9 inches long by 5 feet across at the widest part. I was loth to disturb the bird, and so allowed him to entertain me with his wonderful mimicry before startling him by emerging from my hiding-place. One fact which I had recently come to notice was that the power of imitation of the bird-notes and bush sounds was daily increasing, and different from when I first arrived in the district; my theory is that such is the case as the mating time draws closer, and that Nature thus provides the bird with increased inclination and power in this respect so as the better to win the attention of the female. The noisy, alarmed buzz or pulsating rattle of a captured cicada was

reproduced to perfection, so much so that I found myself carefully scanning this "variety artist" through my field-glasses to make sure that he was not having a real cicada for breakfast. At about 6.30 a.m. the bird took flight as I moved in more closely to centre my watching powers on the newly found nest. Alas! for the vanity of human hopes—even as I sat focussing my glasses on the spot, I heard the call of approaching Spotted Cat-Birds, and, lo, a mated pair flew into the tree above me, and one then flitted straight to the nest, added a twig to its inside structure, then, flying off, uttered that queer call that seems to say—"I'm going to marry you." Another disappointment.

Returning to camp, I got what compensation I could from the promise of "Ducks for dinner" with which Mr. Frizelle endeavoured to console me. Having despatched a meal, we tackled the scrub in company, each choosing a Tooth-bill's play-ground and settling down to a long watch of over three hours. We were about 100 yards apart, and on comparing notes afterwards found our observations to tally. In each case the bird had perched on a vine or branch about 2 feet above its play-ground and gone through a full rehearsal of its *repertoire* of mimicry, now and then hopping down to straighten or turn some of the leaves, and then returning to its vocal practice with renewed energy. The leaves used were of three or four species at both of these grounds, and were chiefly long and narrow, the large leaves of the crow's-foot elm—*Verbenaceæ* (?)—being mostly used, some measuring 17 by 4½ inches. They are tough leaves, glossy on the upper surface, dull and thickly ribbed on the reverse. The rejected ones of previous days were lying outside the two play-grounds in great numbers. The puzzle was getting absolutely worrying. Here was a bird that seemed to be at its play-ground through at least all the hours of daylight, alone. Did it never eat, rest, or consort with its fellows? Certainly it looked as if it never did, for to get a vacant play-ground one had to scare the bird away; this, as it is very shy, was easy enough, but, if the approach of the observer was quiet, he would be rewarded by a good sight of this feathered enigma in his or her lonely state. During the day we found several old nests of the Black-headed Log-runner, and one of the Spotted Cat-Bird which contained a fledgling, and later on we came across a fine male specimen of the Victoria Rifle-Bird. He was splendidly displayed on an isolated branch about 45 feet from the ground, and we had seen the same bird daily in the same spot; the female, however, was not visible, and I concluded she was sitting on a nest not far away, which we could not find. However, we happened to come across two nests of the Spotted Cat-Bird, each just ready for eggs, and we noticed that the Ashy-fronted Fly-Robins were very much in evidence, several of their new nests being found, mostly located on the



upright lawyer vines, just at the branching of the leaves. Amongst other objects of general interest was a giant parasitical fig-tree measuring over 25 feet across. What a magnificent monument to Nature's slow but irresistible work! What pigmies we seem, and how short appears life's fitful fever compared with the tree's great age! One pays, however, for the privilege of these scrub wanderings. The coin current in this case was the endurance of that awful "scrub-itch," and I was glad to get back to camp to ease the ceaseless irritation, which was getting my legs into a really horrible state.

Other names given to different birds by the local aborigines are as follow:—White Goshawk ("Pige-ore"), Channelbill ("Cor-ell"), Black Duck ("Bul-o-go"), Jardine Caterpillar-eater ("Tura-bunna-bunna"), Red-winged Lory ("Corang-i-go"), Pheasant-tailed Pigeon ("Chud-du-low"), Leach Kingfisher ("Coorong-gar"), Victoria Rifle-Bird ("Eur-a-lum"), Swamp Coucal (Bun-boon-bun-bō), Black-headed Log-runner ("Chowchilla"), Brush-Turkey ("Wā-woon"), Koel ("To-wāā"), White Cockatoo ("Curra-nāā"), Coachwhip-Bird ("Go-o-wan"), Leatherhead or Friar-Bird ("Cog-oo-rada"), Northern Bluebellied Lorikeet ("Cal-berra"), Whistling Eagle ("Chid-dee").

During to-day (2nd November) I played a "lone hand," and had a solitary 12-mile tramp through the scrub. Plenty of male Victoria Rifle-Birds were to be seen, but no females. I found also evidences of the general breeding season in nests of the Black-headed Log-runner, Spotted Cat-Bird, Fruit-Pigeons, Ashy-fronted Fly-Robins, and others. I secured some eggs of these Robins, but in each case found only one in a nest, evidently the usual number. These Robins appear common here. The nests are composed of roots, moss, dead leaves, &c., and lined with thin roots, stringers of which sometimes hang down from the nest to a length of 12 to 24 inches. The nest is larger, flatter, and more compact than those of the *Eopsaltria*, and is mostly built about 7 feet from the ground. The Cassowaries (*Casuaris australis*) evidently haunt these scrubs; during this day's explorations I found their fresh tracks. Close by the butt of an old red cedar I came on a new experience—namely, a Tooth-bill actually perched some 30 feet above, and, carrying my eyes along, I saw another similarly perched about 10 feet away; both were silent, and watched me with a furtive, sidelong glance. This was the first time I had seen them "aloft" save when flushed from their play-grounds. They flew in different directions, and, on following up one to a mass of lawyer vines, I found a nest about 7 feet from the ground. I was pleasantly startled to feel therein two eggs, but I was sorely disappointed to find that they were only those of the Coachwhip-Bird (*Psophodes lateralis*). The Tooth-bills had meantime escaped me, but I could hear them not far off, in their play-grounds,

and, with a view to finding them again, I carefully marked the locality. On my way back to camp I found seven more nests of the Spotted Cat-Bird and two of the Log-runner. But I had to pay painfully for the results. I got badly stung on the face by the giant or large-leaved stinging-tree, when reaching out to one of the Cat-Birds' nests; the sting was so severe that my eyes and throat were badly affected, and not even the application of the supposed antidote—the juice of the scrub lily or cungevoy—would lessen the smarting pain.

The Black-headed Log-runners are rather interesting. They fly but little, but their running powers are as remarkable as their unique and frog-like note. Literally they “scratch for a living”—scratching hard, too, and scooping deep pockets in the rotting scrub-strewn *débris*. There were a good many of the beautiful Barred Cuckoo-Shrikes (*Graucalus lineatus*) in the scrub, and I could hear their notes all around me, sweet, clear, and musical, a pleasant contrast to the harsher calls of some of the local songsters. The Ashy-fronted Fly-Robin (*Heteromyias cinereifrons*) has a habit of often dropping its wings to the trail when feeding and hopping about; it is a very quiet bird, having apparently only three gentle notes, the first high and the successive two low-pitched; they are known to the aborigines here as “Tul-be.” At first I assumed these birds to be one of the species of *Rhipidura*, owing to their movements and wing-dropping habit, which, for example, is very noticeable in the White-shafted Fantail (*Rhipidura albiscapa*). The scrub-itch mites, tiny red parasites hardly visible to the eye, punished me severely again to-day; they mostly attack the legs below the knees, and quickly reduce them to a raw state of intense irritation, which was bad enough to make sleep quite impossible, and I found on inquiry that the aborigines suffer to a similar degree.

Next day (3rd November) I found I could not possibly venture into the scrub, for, between the severe scalding sting of the giant nettle-tree and the countless bites of the scrub-itch mites, I found it necessary to be careful lest blood-poisoning should ensue. In the big fig-trees I could hear the Koel and Channel-bill making very loud music, and had to content myself with a day of note-writing and listening.

The following morning (4th November) I felt well enough to start off at 5 o'clock to watch the pair of Victoria Rifle-Birds previously located. As the early morning is the female's feeding time the hour was opportune, for it is the female that generally betrays the nest. Sixteen miles of scrub wandering I put to my credit—16 miles alone, for my mate had gone away that morning for a few days—but the points of interest in that ramble alone would fill a small book. In one place I found a wallaby-camp; the ground was worn down and trampled flat, and the



Nest and Eggs of Spotted Cat-Bird (*Etracatus maculatus*). Tinaroo Scrubs. (About one-third natural size.)



stones and logs polished with the friction of their constant traffic. It was here that I discovered that the Tooth-bill's "chuck" note is not really its own, but borrowed from the Bower Shrike-Thrush (*Collyriocincla boweri*). I heard two of these Thrushes rendering it at first, and took it as proceeding from a Tooth-bill, until by patient watching I saw the Thrushes at it. I was helped to decide this fact by the clear trill of sweet harmonic notes with which the Bower-Thrush follows up the "chuck" call, all of which I had often heard the Tooth-bill give at its play-ground. The Fruit-Pigeons had evidently been breeding here in almost a colony, as their old nests were to be seen low down in many of the smaller trees and vine-clumps. I came across an aborigines' "bora" ground, or, as the local tribe call it, "Did-an-garr." It consisted of a cleared area in the very heart of the jungle, the work, no doubt, of some hundreds of years ago, when the natives had nothing but stone axes to work with. Around it were several grass-thatched gunyahs, and, as the natives were many and a wild-looking lot, I considered discretion a wise choice, and kept aloof, sheering off in another direction. The Lesser Pittas (*Pitta similima*), which are known to the blacks here as "Wog-gow-wah," were justifying their claim to the name which describes them, and in the course of my wanderings I found several new nests, all of which were placed at the roots of trees; but perhaps the most interesting find was in a patch of yellow cherry trees—trees which bear a crinkled and yellowish fruit not unlike the Brazilian cherry in flavour. Here I became nearly bushed, and about 4 miles from my camp I saw a stately Cassowary following the tactics of a predatory school-boy on orchard-robbing intent. Having no hands to shake the fruit from the boughs beyond his reach, he was vigorously bumping the trunk with his breast—truly an arduous method of winning a meal, and perhaps likely to contribute to speedy digestion! This the blacks informed me was quite a common habit with this bird. The bird seemed to be very tame, and walked off in an unconcerned and dignified fashion; he was really quite a majestic fellow, with a horn on his head about 5 inches high by  $2\frac{1}{2}$  across at the base. These birds are not exactly common here (though I saw plenty of their traces), but towards the coast they are more plentiful; still the blacks tell me that their eggs are sometimes found in these scrubs. Further on I again saw a Tooth-bill perched in a tree some 25 feet or so above me. Here the scrub was a bit clear, and I could look up; here again, then, was the unusual feature of a perching Tooth-billed Bower-Bird, so I climbed the tree in which he was sitting, and several others as well, hunting keenly for the hoped-for nest, then coming down again and scanning all the greenery overhead with my field-glasses, but without success. These birds must be going to breed

now that they are at last going up into the trees. I obtained specimens of Spotted Cat-Birds' eggs and Ashy-fronted Fly-Robins', and in doing so managed to tear my hands and face badly with the lawyer vines. To know what lawyer vine scrub is you have to see it and work in it; it is beyond description, and taxed my endurance to its limit. But there was no use in "kicking against the pricks." Returning at about 6.20 p.m., when close to camp I passed a Tooth-bill's play-ground with its solitary occupant going through his usual rehearsal. It is always the same—whenever I pass that play-ground the bird is always there, always alone, and always singing. Does he or she never sleep, or feed, or turn attention to the primrose paths of courtship? Up to the present I have located seventy-six of these play-grounds, but the same conditions applied unvaryingly to each, and in every case they were occupied by only one bird.

The following are the readings of my aneroid of heights above sea level, taken at my Tinaroo camp and at five railway stations between Cairns and Atherton, namely:—Cairns, 5 feet; Kuranda, 1,074 feet; Mareeba, 1,319 feet; Tinaroo Camp, 2,249 feet; Tolga, 2,451 feet; Atherton, 2,459 feet.

5th November.—A wet day in the scrub—a miserable experience, when inactivity is to a certain extent forced upon one under cheerless circumstances. Still it is hard to keep one's enthusiasm down, and I managed to put in some work, in spite of old Pluvius, by finding several nests, amongst which were two of the Ashy-fronted Fly-Robin and two of the Black-headed Log-runner; the former yielded me one egg each, the latter were evidently just ready for laying in. Near a large clump of young large-leaved stinging-trees I discovered a nest and egg of the Pheasant-tailed Pigeon (*Macropygia phasianella*). One learns to treat these trees with marked respect. Cases of the actual death of stock through contact with these pests have been known in this district in several instances. With extreme caution I measured some of these leaves, which were in many cases no less than 17 inches long by 14 wide. The Lesser Pittas were busy in the scrub this day; so were the Black-headed Log-runners. I found an interesting nest of the latter species, of which I furnish an illustration, as its location was rather unusual; it was built on the top of a stump, about 6 feet from the ground; in fact, when I flushed the bird she nearly flew into my face. It is notable that last year's nest was close by, behind it, and similarly built on the top of a stump, the only difference being that it was 10 feet from the ground instead of 6. These nests must be splendidly built, for the one under notice was quite warm and dry inside, in spite of the torrents of rain that had fallen during the day. Spotted Cat-Birds were now building freely; I found several nests the same day, one of which was unique in the fact that it was only at a height of 2 feet 7 inches



Nest (*in situ*) of Black-headed Log-Runner (*Orthonyx spaldingi*).  
(NOTE.—The watch on stump acts as a scale.)





from the ground, whereas the bird as a rule builds at least 9 to 12 feet up.

Absolutely torrential rains held me indoors on the 6th, but on the following day, which was dull and threatening, I made up my mind to chance the rain and endure the drenching shower-baths from the water-laden undergrowth, and started off early for my day's work. One of the first birds which I sighted was a fine male Pied Flycatcher (*Arses kaupi*), and shortly afterwards got the excitement of the day, flushing a male Victoria Rifle-Bird from a tangle of dead leaves and vines clinging to a sapling about 25 feet from the ground. It was a most promising clump, just the place for a Rifle-Bird's nest. But it was only a false alarm. I then made for the place where I had already located a pair of these birds; it was now nearly 6.30 a.m., and I found the female off her nest enjoying a sylvan breakfast. When first I saw her she was drinking the drops of rain from the ends of the hanging foliage, whilst the gorgeously plumed male sat motionless on an adjacent limb. I watched them for over half an hour, and then the crucial moment came when the female prepared for flight (as I hoped) back to her nest; after preening and pluming herself with her long, curved bill, she shook her plumage together and was off like a flash, with me on her trail as fast as I could go, falling over logs and vines; but in that tripping tangle I had no chance, and I lost her very soon, for these Rifle-Birds, with their swift flight, are extremely difficult to follow in dense country like that. No man could do it. I found two Log-runners' nests not far away—one beautifully placed on the crown of a bird-nest fern (*Asplenium nidus*), making a splendid subject for the camera a little later, when I took an egg from it. It was on the side of a tree about 5 feet from the ground, while the second one was cradled in lawyer vines about 11 feet up. Another egg of the Ashy-fronted Fly-Robin rewarded me not far away from the spot. These birds nearly all place their nests on upright lawyer vines. I also came across some more Cat-Birds' nests, in some instances carrying young birds. The Northern Bluebellied Lorikeets (*Trichoglossus septentrionalis*) made the scrub re-echo with their noisy, screeching cries, as they fed on the blossoms of the scrub chestnut or bean-tree (*Castanospermum australe*). The peculiar notes of the Allied Fruit-Pigeon (*Megaloprepia assimilis*) could be heard throughout the scrub, also the loud, ringing crack of the Coachwhip-Bird. In the afternoon I regained my camp-mate, Mr. Frizelle, who had been away for a few days. Together we visited a patch of lawyer vines of exceptional thickness, and here discovered over a dozen old nests and new of the Black-headed Log-runner, all located at heights varying from 2 to 10 feet. A new discovery was also made in the shape of quite a colony of Shining Calornis

(*Calornis metallica*); the dome-shaped, suspended nests were numerous, though inaccessible, being hung at the ends of the branches of a very tall kauri pine (*vide* illustration). These cunning and noisy little architects seem to know well how to baffle the predatory longings of the oologist. I was much interested in recognizing a familiar note in the scrub chorus to-day, that of the Caterpillar-eater (*Edoliisoma tenuirostre*); it seemed quite homelike, and made me feel like being near Sydney again. Not far from the camp we came across a pair of Tooth-bills; they were perched on a limb about 20 feet high, and they were evidently conducting a primitive courtship, from time to time rubbing their bills together. We watched them for some time until they both wheeled and flew straight into the thickest of the scrub behind our camp, and if all goes well we will find their nest there before very long. The completely novel sight of Tooth-bills evidently paired, and perched aloft instead of doing solitary sentry duty in a bower, inclined me to the idea that the whole lot of them would soon be nest-building. This is an important link. I saw another fine specimen of the Pied Flycatcher, and found a nest of the Ashy-fronted Fly-Robin containing *two* eggs—a rare occurrence. We also found a Spotted Cat-Bird's nest at the top of a large-leaved stinging-tree. It might have been a case of the fox and the grapes, but with much care, and at the cost of only a few light stings, we managed to secure the eggs. Another risk to which the scrub exposes one is that of being struck by falling limbs, which are continuously breaking away from the trees. There have been several cases recorded here lately in which this has not only occurred but has done so with fatal results; in fact, from several causes the scrub is a place in which one has to be very careful. It can be safely stated that the Ashy-fronted Fly-Robin is one of the commonest birds of this locality; its slow, plaintive notes are quite part of the usual sounds of the scrub. The day's finds in the way of Tooth-bills' play-grounds now brought my total up to 105. I heard one of the birds imitating the twittering call of a young bird being fed; this was the first time that I heard this piece of mimicry, and it was perfectly rendered. We made a rather gruesome discovery during the day. Hanging from a tree we found a bag containing the skull and bones of an aboriginal man, and near it was an oval wooden shield with a broken spear sticking into it. It appeared on later inquiry that these relics had been "planted" by some of the blacks who were gathering for a corroboree to be shortly held at the "*Did-an-garr*" or "*borá*" previously described. This place is (or used to be) located a few miles from our camp, and, as referred to already, consisted of a small cleared space in the dense scrub, with several native gunyahs, or, as the local aboriginal name has it, "*Tuan-guns*"; they are wonderfully neatly built, and



Native climbing Kauri Pine in quest of Nests of Shining Starling  
(*Calornis metallica*), Tinaroo Scrubs.



thatched with palm-leaves, blady grass (*Imperata arundinacea*), &c., the latter known to these natives as "*Cherra-garra*." As will be remembered, I judged it wise on the former occasion to give these wild warriors a wide berth, and on the occasion of my second visit I did the same thing. No wariness or caution, however, will keep you immune from leeches and scrub-itch mites; they are truly awful pests, and the former are much worse since the heavy rains.

What wonderful timber is in these dense jungle solitudes! One giant parasitical fig-tree, the largest I have ever seen, measured 60 feet across at the roots, and was worth coming a long distance to see. I photographed the lower portion of it, after we had cut down sufficient trees and vines to make room for the camera. The tree is known to the aborigines as "*Coolara*." Everything here is on a big scale, even the pestilent lawyer vines, sometimes up to an inch and a half in thickness. A vine of this strength has been known to stand a strain of nearly 40 tons. Occasionally huge logs are hauled out of the scrub by their means; in fact, if the strain be direct, they can harness a team of fourteen horses to them for log haulage.

We had acquired two or three aboriginal camp-followers by this time, like all of their type intensely lazy, but possessed of climbing powers beyond anything any white man could ever develop. Moreover, their local knowledge of places, birds, and animals was exceedingly useful. I conversed in "pidgin" English with many of these local "niggers," but none of them had ever found or seen the nest or eggs of the "*Cherra-chelbo*" or Tooth-bill, but Rifle-Birds' and all other eggs they could describe to me. I offered them a handsome and encouraging reward if they found a nest and took me to it. Numbers of them turned out for the hunt, but returned always to me, usually saying—"Me tink it that pfeller '*Cherra-chelbo*' sit down yamba (sleep) alonga big pfeller tree. Me looket longa time, no findem nes or heg." This does not look as if the eggs will ever be a common exhibit in the oological collections. The birds seemingly baffle both whites and blacks, the latter born and reared amongst them, too. Above all "white pfeller tomahawk" is an inducement which will betray these "niggers" into exertion of body and brain quite foreign to their usual slothful habit. Queer tastes they have, too. I came across the best man of our "staff" cutting out large white grubs (the larvæ of beetles) from a log in the scrub and eating them raw! This grub, called in their dialect "*Jam-boon*," seems highly esteemed by these dusky people.

I found several more nests of the Pheasant-tailed Pigeon, and recorded a good many points of interest. Amongst them was a vine (*Vitis*, sp.) naturally knotted at about every 18 inches, thus affording great assistance in climbing. I also came across a

new fern of most interesting habit and growth ; it was attached to a tree, and resembled more than anything else a bunch of long, green, flat bootlaces, measuring, in fact, as much as 4 feet in length. This was beside a play-ground of the Tooth-bill. The list of pests seems to grow every day. Bandicoots—or, as the aborigines here call them, "*Ben-go*"—infest the place, so also do the large white-tailed rats, and these make a great mess in our camp stores in a most exasperating way ; large March-flies pester and sting during the day since the heavy rains ; and in the moist, warm nights slugs, snails, and leeches invade one's place, and even person, and do not increase one's comfort.

8th November. — Still in Tinaroo camp. Two more play-grounds of the Tooth-bill were found at the outset of the day ; these were only about 36 yards apart, in rather an open part of the scrub, and probably belonged to a pair of birds, and were close to the spot where I had recently seen a pair of the birds perched in a tree. This seemed promising of developments, so I made up my mind to an all-day vigil, and chose a tree with an accommodating fork from which I could watch them through my binoculars, away from leeches and smothering scrub-itch. Did you ever try watching birds, or anything else, in scrub through glasses from 7 a.m. till half-past 4 in the afternoon, and up in a tree ? It is a punishing job—arms, eyes, and back ache intolerably with the strain and cramp of enforced stillness in an awkward position. However, my labours were not without reward. I saw a link which told me that the birds had, or were building, a nest not far off, and that they would soon be breeding. Most of the time while I watched them they would hop down from their singing perch, flirt with a leaf, and fly back again to their old post and old performance of mimicry of bird, cicada, or what not. Cramped in bone and muscle, I returned to camp more satisfied, and more determined than ever to soon solve the mystery of the nidification of these most interesting birds. I have often watched them at their early morning leaf-cutting, sawing away cleverly at a thick-stemmed leaf like that of the crow's-foot elm (*Verbenaceæ*?). Finally the serrated bill would triumph, and off the persevering "upholsterer" would fly to add another bit of carpet to his bower. I am now inclined to think that this toothlike serration has nothing to do with the collection of food, but I got ocular proof of its employment in the leaf-collecting, and have heard the "snip" when the bird has succeeded in severing the stem. Their habits are curiously regular. They always seem to lift the leaf by the stem only, thus avoiding any damage to its symmetry ; in fact, they appear to have a strong taste for form and neatness. They feed on a red berry collected from a shamrock-shaped pod,\*

\* Have so far been unable to obtain the botanical name of this.—S. W. J.

obtained from a scrub tree, which, after much difficulty I traced by the black seeds. The seeds, however, were found only under the singing perches in their play-grounds.

The Stalker Fig-Bird (*Sphecothebes stalkerii*) we found plentiful in this district, and to-day took our first clutch of their eggs. The nest was placed in the topmost branches of a bloodwood (*Eucalyptus corymbosa*) in Ziginbine Pocket, not far from the camp, and contained four eggs.\* The eggs closely resemble those of the other two Fig-Birds, and likewise the nest. (*Vide* illustration.)

I found a number of nests of Pigeons to-day, some new, and noticed, amongst other things, a regular migration of large and beautiful butterflies, which passed over the camp towards the south-east. It was intensely hot, and to make it hotter the Fates arranged that we should have a turn at fire-drill; a mischievous spark caught in the thatched roof of our galley, and before we were quite aware of it our kitchen no longer existed. It was only our haste that saved the camp. I noticed that the Coucals (*Centropus phasianus*) were very plentiful in the long grass fringing the Barron River, and I was informed to-day that the Cassowary is by no means uncommon in the wild scrubs at the foot-hills of the Tinaroo Range, about 5 miles from here.

I put in some hours to-day (9th November) across the river, behind the camp, watching a pair of Victoria Rifle-Birds, but could not locate their nest. I also watched again at their grounds the pair of Tooth-bills which I recently spent a day at watching with the field-glasses, but had no luck. I felt sure that this pair frequenting the back of the camp was building not far away, and I resolved to keep a close watch on their movements, with the valuable help of Mr. Frizelle. Fire yesterday and flood to-day! A fearful storm visited us, and, but for the fact that I was at the camp, our entire outfit would have been swept into the river. As it was, we had quite enough damage done. The "Storm-Birds" or Channelbill Cuckoos were feeding in the big fig-trees for hours, and kept up an incessant, loud chorus of most unmusical cries. The storm also brought a perfect invasion of scrub-snails—big fellows, too; they would have gladdened the heart of a Parisian. *Helix pachystyla* and *Helix semicastanea* were the main features of the shell-backed army, which crawled over bunks, table, food, and even our clothes. Another result of the heavy rain would, of course, be the building of the big mound nests of the Scrub-Fowl (*Megapodius duperreyi*), as they generally choose the time when the *débris* and vegetable matter of which they make their mounds is wet, so that the heat of fermentation will aid the process of hatching out the covered eggs. They were present in force, and

\* Described on p. 283.

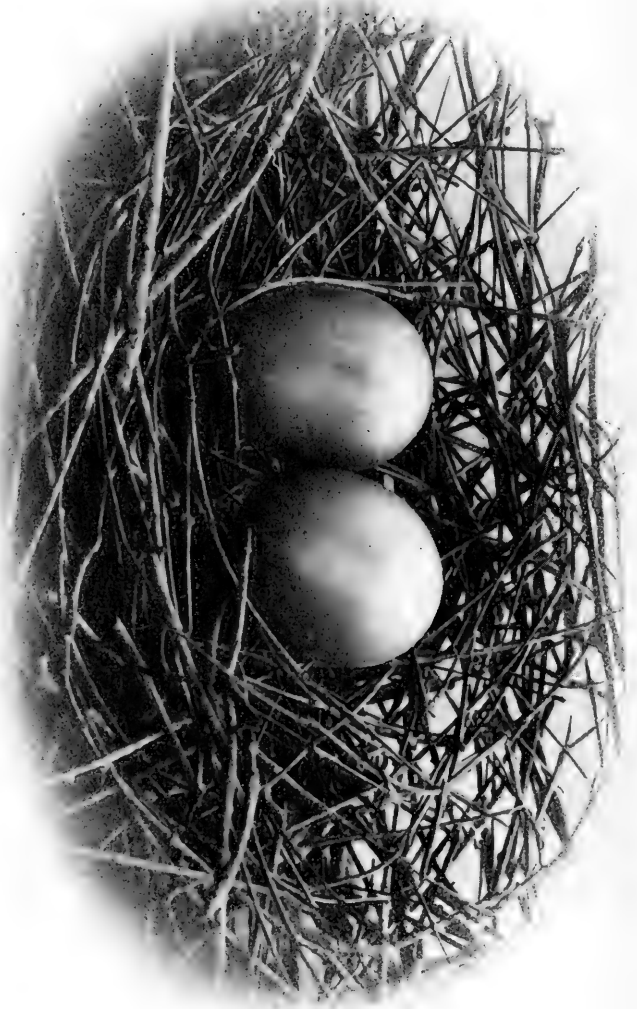
I could hear their call, which resembles their native name ("Chura-qua"), sounding all through the scrub.

10th November.—I took a four-hour watch on a Tooth-bill's play-ground, but without any further results. The whole scrub was alive with bird-life, the Channelbills being particularly noisy; the smaller Cuckoos, with the exception of the Fan-tailed species (*Cacomantis flabelliformis*), I did not find in these scrubs. More Spotted Cat-Birds' and Black-headed Log-runners' nests found to-day. Bee-eaters (*Merops ornatus*) were plentiful along the banks of the Barron, and were busy digging out their tunnel-nests. For the first time in these parts I saw a Crow (*Corvus coronoides*)—quite a return of an old acquaintance! I noticed this day that the Tooth-billed Bower-Birds behind the camp were imitating the Dollar-Bird (*Eurystomus australis*), or, as it is known by the blacks, the "Tar-garra." The mimicry was absolute perfection. The small excitements of the day—while hunting for the nest and eggs of the Tooth-bill—included an encounter with a large black snake (*Pseudechis porphyriacus*), or, as the blacks here call it, "Cun-doi," and a startle by my coming plump upon a dingo, which slunk away into the depths of the scrub. Barred Cuckoo-Shrikes were plentiful.

11th November.—The small tragedies and battles of the scrubs are interesting to watch. During my morning ramble I saw a Channelbill in full flight from Ziginbine Pocket, with a Magpie (*Gymnorhina tibicen*) in hot pursuit; the latter was evidently hotly resenting an attempt to foist a strange egg upon his sitting mate. More Tooth-bill play-grounds found, but, alas! no more information. Our best black was climbing nearly all day near the play-grounds to see if he could locate a Tooth-bill's nest, but without avail; it seems to me that the only hope I shall have of final success will be to mark out a belt of scrub frequented by the birds, subdivide it into strips by marking the trees, and set my staff of three "darkies" to climb every tree in the selected area. There appears to be no other method, the foliage is so dense and high. When I was on the track to the foot-hills to-day I came across several Tooth-bills' play-grounds; one of them had thirty odd leaves in it, nearly all in the reverse position. The ribs of these leaves are very strong; it is possible that the birds choose these with a view to prevent them curling from the heat, for the ribs are so thick and so placed that they brace the whole leaf naturally and effectively. I managed to get a little useful information from our aboriginal followers as to the whereabouts of the Golden Bower-Bird (*Prionodura newtoniana*), known to them as "Wargan-dilla." They made me understand that they are found high up on the Tinaroo Mountains, about 8 miles from our camp; it is difficult—and to the onlooker amusing—to conduct a conversation by signs eked out by "pidgin" English with these dusky scrub-







Nest and Eggs of Tooth-billed Bower-Bird (*Scenopætes dentirostris*). (Nearly natural size.)  
Taken Tinaroo Scrubs, 9/12/08.

dwellers ; but there was no mistaking their description, both of the bird and the huge play-grounds of sticks of this species, the stack of sticks of which is sometimes equal to over the height of a man ; moreover, their information was borne out by that of two other aborigines who had come from the higher country. I also ascertained that these birds were plentiful in elevated scrubs at Evelyn, on the Herberton Range, about 40 miles from my Tinaroo headquarters. However, it is the Tooth-billed Bower-Birds right at my camp that will engross my attention till I find out all about them, their nests and eggs. We found the nest and eggs (new to science) of the Scaly-breasted Tit (*Acanthiza squamata*), which are described on p. 284.

To-day (12th November) yet another disappointment ! I had found a high-placed nest in a mass of vines right over a Tooth-bill's play-ground. Surely, I thought, this at last must be the long-looked-for solution of the puzzle. The bird left the play-ground on my approach, and hopped up towards the nest. Not a bit of it ! We went to the trouble of rigging up a cross-stayed sapling, so that we could climb to examine the nest, otherwise inaccessible. After all our elaborate preparations it turned out to be the nest of the black scrub-squirrel, known by the local blackfellows' name of "Chal-goey." Scrub-itch terrible again to-day. Saw more large kauri pines with colonies of the Shining Calornis nesting in the inaccessible tips of their branches. The birds are a noisy crowd, and easily scared to swift and gregarious flight. The ground beneath the nests was literally covered with the shells of their eggs. I followed up a splendid specimen of the Pied Flycatcher for quite a long distance, but failed to locate the rare nest. I, however, got my reward in an unexpected find of the rare White-faced Robin (*Pacilodryas albifacies*). I had to watch the bird for a long time through my glasses, but at last found the nest, in process of building ; it was about 15 feet from the ground, attached to a lawyer vine, and I may mention that later on I got two highly prized eggs from it. (*Vide* illustration.)

I heard many of the Lesser Pittas, and still more of the Tooth-bills. The latter do not appear to originate much, their mimicry being necessarily limited to the sounds generally incident to their own locality. I made up my mind to shoot one or two well away from the camp, and dissect the first female secured, so as to arrive at their condition regarding the breeding season. My record of discovered play-grounds now reached 117. Where and when, I wondered, would my memoranda include the long-looked-for "nursery" ? Up to this point I had patiently watched and located no less than eight distinct pairs, and, having got so far, felt that the finding of the nests should follow at short date. Fever is worrying me just now, robbing active research of much of its delight ; still the interest is strong

enough to keep me up. During the afternoon I treated my camp-mate and our dusky attendants to a little object lesson by taking them to see the rare White-faced Robin's nest, which was then in course of building.

13th November.—It was reception night last night! Our first visitor was a Channelbill, which inflicted its rather monotonous serenade on us till the hour of midnight. Bandicoots then arrived, and conducted active investigations into our camp and equipment; it does not exactly conduce to sleep to hear these animals rattling round among the tucker-boxes, and to reflect that the next day you may be dinnerless. These queer little fellows are very fond of salt; in the morning we found that they had exploited our salt beef for the sake of this (to them) unusual delicacy. The air of the scrubs was oppressive after the recent heavy rains, and more than anything else resembled the hot chamber of a Turkish bath. This day I found a nest of the magnificent Allied Fruit-Pigeon containing one egg, but the event of the day was the shooting and dissection of two Tooth-billed Bower-Birds. Curiously enough, they were alive with scrub-itch, which had eaten torturing sores into them under the tail and coverts. As a precaution, before handling them I plunged them into boiling water. Both were females, and each contained two small eggs in a soft condition and of yellow colour; the measurement of one of these was duly recorded as .44 x .28. I preserved all four in formalin. It was evident that these birds would have laid in about ten days, as there were no other eggs in the ovaries, and, after minute examination under the rays of my electric lamp, it was evident that both eggs were in each case fertilized and that they carried small yolks. I preserved the heads of both birds, in order to make scale drawings of the tooth-like serrations of the bills. The bird itself, seen closely and measured, is found to be smaller than the Spotted Cat-Bird, which is known to the aborigines as "Chigua-ah." It is somewhat strange that these two birds, both females and carrying fertilized eggs, were shot at play-grounds not more than 120 yards distant from each other. I regard this as a very noteworthy fact. Birds of the bower-constructing habit generally somewhat isolate themselves from all but their mates, but these two females were near neighbours. I may also mention that the crop of each bird was full of the small black seed to which I have alluded as being found in the droppings under the singing-sticks at the play-grounds. It rained in the afternoon, but out we went, and in a very short time got fairly covered with leeches, ticks, and scrub-itch. However, we had a measure of compensation in finding two Log-runners' nests, each perched picturesquely in the cup of a bird-nest fern (*Asplenium nidus*), which in turn was growing, in its most usual fashion, on a tree-trunk. I gathered

a good deal of obviously reliable information from our dusky camp-followers. Amongst other things I learned that the Queensland Bower-Bird (*Chlamydodera orientalis*) was in the habit of breeding in the open forest lands about Tolga and Atherton, and within about 8 or 10 miles of our camp at a place called Rocky Creek, where their large and wonderfully decorated bowers were to be found. To the local blacks the bird is known as "Pila-pirra." It would be interesting to the student of languages to note that nearly all the native names given to birds and animals are compounded of two or more distinct words, also that the names of many of the local birds, &c., have a throaty, guttural sound, in which the "ch" is a feature; such, for example, as "Chura-qua," "Cherra-garra," "Cherra-chelbo," "Chow-chilla," "Chigua-ah," "Chal-goey," "Chid-dee," "Chud-du-low." I was rather interested to note that the pair of Tooth-bills located in the scrub at the back of the camp refrained from their usual *repertoire* to-day; I was pleased, too, for it seemed to suggest that they were too busy at building and furnishing to indulge in song. I immediately determined to watch them very closely the next day, and to have our best aboriginal climber on hand in case he was wanted.

There was an enormous kauri pine located not far from our camp—a perfect king among his fellows; in fact, I estimated that he would "log out" at about 10,000 superficial feet. In this tree we found close on sixty nests of the Shining Calornis (*Calornis metallica*), and they were simply alive with scrub-itch; wherever this horrible pest settles it stays, and breeds at a prolific rate, and in these nests it was practically undisturbed; but what the poor little fledglings suffer it is hard to imagine. We were spared mosquitoes—it strikes me that the other pests were a bit too strong for them; anyhow, it is certain that the March-flies are quite enough without any other insect.

After breakfast (14th November) I started with Mr. Frizelle and my bodyguard of three natives for the place behind the camp where I had located the pair of Tooth-bills, and where, however, I had noticed them (contrary to their usual habit) silent yesterday. On the way we again noticed a Magpie (*Gymnorhina tibicen*) in full cry after a Channelbill, and from the same direction as that in which I had observed it before; we made note of the fact, as indicating, of course, that the good old Magpie was resenting the invasion of its "happy home." Working cautiously towards the play-grounds of the Tooth-bills, we found them empty—a fact in itself encouragingly significant—so, taking up different quarters or positions of vantage, we settled down for a long watch. After a while we detected the birds very high up in one of the trees (roughly speaking, about 90 feet); they also had evidently noticed us long ago, as they remained very quiet, with occasional side glances at our hiding-

places. Finally they flitted off, and we seized the opportunity to climb up and hunt for the expected nest. I entrusted the job to my best climber, who selected a long hanging water-vine (*Vitis*), and simply walked up it as a fly would on a hanging string. He was one of the very best among the many marvelous aboriginal climbers I have known. He spent a long time up in his leafy eyrie, and finally located what he took to be the nest in a mass of very dense foliage. All the while we were in a state of restless apprehension lest the birds would return and discover the intruder, and in fact he had only just dropped the last few feet of his downward journey when they did come back, and flew straight into the clump which held the supposed nest. Very eagerly we put our climber through a cross-examination. He described the assumed nest as placed on a tangled mass of vines and as composed of freshly broken, thin, dry twigs, loosely put together, and evidently only recently commenced. According to his description, at this early stage it much resembled the nest of the Allied Fruit-Pigeon, which in his own dialect is styled "Bog-um-moo." In my mind there lingered no doubt that we had at last found the long-hoped-for nest of the Tooth-billed Bower-Bird, and my dark retainer grinned cavernously, and, with a view to adding extra assurance, repeated the native name of the bird, "Cherra-chelbo," over and over again, but I could see, with some uneasiness, that my friend Frizelle was not satisfied. In fact, he voiced his suspicion by saying that he was puzzled over it, and that he had expected the nest to more closely resemble that of the Spotted Cat-Bird.

By-and-by the birds returned and flew into the mass of greenery which contained the nest, but, try as I would at every view-point and every angle, and using the strongest of field-glasses, I could not pierce the baffling screen of leaves and ascertain exactly where they were and what doing. As a last resort I got my aborigine to get twigs and sticks of the same size as those composing the nest, and to reconstruct as it were a model of his find, and from this meagre information I had to calculate the stage at which the building of the nest had arrived, coming finally to the conclusion that it would be a few weeks before eggs were laid. The result lifted a worrying anxiety as to ultimate possible failure from my mind. I was to a great extent satisfied, and, hoping that the birds would not desert their nest, I returned to camp and packed a kit-bag with a few necessaries for my contemplated trip to the Evelyn scrubs, lying about 40 miles south-west from the camp and on the Herberton Range, leaving Mr. Frizelle in charge of our "base."

In company of Mr. W. E. Bevan, one of the local residents, I reached the Evelyn scrub on the morning of the 17th November. Here I met Mr. J. Sharp, whose brother, Mr. George Sharp, was in the locality, also engaged in oological work, and in securing

and preserving skins of the Golden Bower-Bird and other local species. The latter brother met us the same day, later, a few miles away, and informed me that he had a number of blacks assisting him in his search, and also that he had found a Tooth-bill's nest on the 7th November, containing two eggs resembling those of the Spotted Cat-Bird, save that the colour was of a much darker shade of yellowish-brown. He described the nest as a somewhat frail structure, like that of a Fruit-Pigeon, so that, taking this as corroborative evidence, I was confirmed in my opinion that the new stick nest which Mr. Frizelle and I had located at the rear of our camp a few days before was undoubtedly that of the Tooth-bill. As Mr. G. Sharp was first in the field in the Evelyn scrub, and had, so to speak, a pre-emptive right in the locality, I did not feel that I should trench on his area, and contented myself with asking him, if he had the opportunity to select one of the huge and wonderful bowers or play-grounds of the Golden Bower-Bird, to do so and send me word, so that I might come up again and photograph it. This he kindly undertook to do, and in return I promised I would forward him, later, some of the resultant photographs. After thanking Mrs. Hull and Mr. Sharp for their hospitality, we drove back to Herberton. On the following morning we left that place, and, after a hot and excessively dusty drive, reached Atherton about mid-day (18th November).

## ATHERTON.

To-day (19th November) I had a nasty touch of fever, and I awoke ill-refreshed and with the consciousness that work of any sort, outside or in, was hopeless, so made up my mind to rest for a day in Atherton, and to work the local scrubs the moment I felt equal to the task.

The following day (20th November) I had quite a reception. Several naturalists called to compare notes with me on the subject of the Tooth-bills; they, too, had been puzzled and baffled in their attempts in the scrubs to glean anything of the nesting habits of these birds. They said they could find almost any other nest except that of the Tooth-bill.

To-day (21st November) Mr. W. E. Bevan and myself visited a compact belt of scrub of close on 400 acres not far from Atherton, and in the course of our explorations located 15 Tooth-bills' play-grounds, many of which were carelessly kept. One of these was quite unique. They are always pretty well cleared, but this one was "empty, swept and garnished." As for the usual carpet of leaves, it was so uniform, and the spaces between the leaves so even, that one would have imagined them to have been laid down by rule. It was evidently a new play-ground, as there were no rejected leaves outside. The locality was close to the edge of the scrub, and as we sat and listened to

the solitary occupant's performance, we noticed that this artist in mimicry had an unusual range of programme. One after another he gave us the notes of the Magpie, Pied Grallina (*Grallina picata*), Jardine Caterpillar-eater, the Stalker Fig-Bird, Coachwhip-Bird, and all others which we had heard at the various play-grounds. Quite close to this spot we found a nest only just out of hand's reach which, on examination, proved to be that of the Spotted Cat-Bird, and to contain two eggs. It is distinctly noticeable that these birds seem to fancy the neighbourhood of the Tooth-billed Bower-Bird's bower for a nesting-place; in fact, they seem to be first cousins.

*Litsea dealbata*, the tree from which the leaves are taken which I have frequently referred to as being usually selected by the Tooth-bills for their play-grounds, belongs to the order known in botany as *Laurineæ*.

I noticed that the Spotted Cat-Bird utters three distinct kinds of notes, and one of these is a sound only occasionally given and resembling almost a faint sneeze, thus—"Pit-pit-pit;" but the most common cry of the three is very like their native name—"Chigua-ah." The third cry, which is a longer one, I have already referred to.

In this scrub a great majority of the play-grounds of the Tooth-billed Bower-Bird was in a state of neglect and disorder, yet out of several of those occupied and examined I collected 13 different species of scrub leaves, which conclusively proves that these birds do not select one or even two or three classes of leaves for decorative purposes. My first assumption, therefore, in this matter was incorrect. Patient research removes erroneous impressions. I must not forget to state, though, that the leaves of *Litsea dealbata* figured commonly in each play-ground I visited. In the illustration (Plate XXIII.) of one of these play-grounds, these latter leaves (which are, of course, reversed, and look very white) are well represented. One other point I noticed here was the presence of many broken scrub-snail shells (*Helix*) close to the play-grounds. Amongst other birds noticed were *Piezorhynchus gouldi*, *Arses kaupi*, and *Monarcha melanopsis*. In addition to these a beautiful and uncommon denizen of this lovely scrub was shown to me by Mr. Bevan, who had just shot it. It was one of the opossum tribe, called by the aborigines "Tula"—a pretty name for a pretty creature. It had short ears, which had a bitten-off appearance, with a patch of white behind each; the fur was long, thick, and soft, and of a yellowish-green, thus resembling the moss-covered bark of the scrub trees upon which it lives. It usually sleeps in clumps of ferns, &c., in the trees, and its food consists of tender scrub-tree leaves and flowers.

On returning to Atherton I had the pleasure of meeting the venerable Mr. Palmer, who in 1869 discovered the great gold-





Type Nest and Eggs of Golden Bower-Bird (*Prionodura newtoniana*).  
Found by Geo. Sharp, Evelyn Scrubs, 7/11/08. (About half natural size.)



field which bears his name, and which lies near Cooktown, to the north of Atherton.

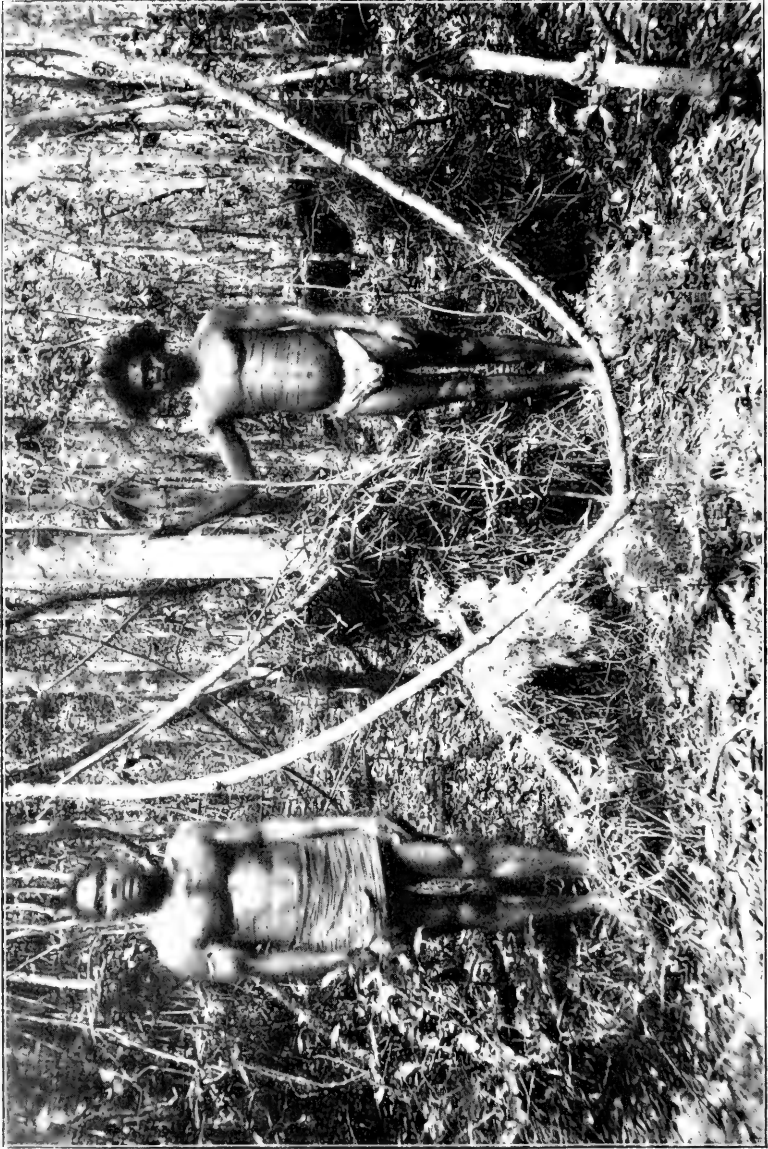
Visited the scrubs to-day (22nd November) again, but found nothing special to report on. It is no wonder that the growth in this region is luxuriant. Passing over a deep-banked creek to-day, I noticed that the red volcanic soil is at least 25 feet deep. I saw a very striking sight during the morning in a huge flock of Sulphur-crested Cockatoos (*Cacatua galerita*). Their appearance, perched at a distance, gave the effect of a capping of snow to the trees, and after they flew down from the trees it appeared as if suddenly a snow-storm of newspapers had fallen from the clouds. The beauty of life here is remarkable. I never saw anything more gorgeously striking than the butterflies which fluttered on the edge of the scrub; they were beyond description for beauty and brilliancy of colour. I daily renewed my acquaintance with the hard, round nuts of the candle-nut tree, so common in all these scrubs. These nuts are strewn all over the ground in the scrub throughout the whole district.

23rd November.—A blazing hot and dusty day in Atherton. I hunted a Black-headed Log-runner from a nest up 20 feet into a tree. This was the first time I noticed one fly up like this; these birds appear to make their home entirely on the ground. Only saw one play-ground of the Tooth-bill occupied to-day, and for the first time heard one of these birds mimicking the note of the Victoria Rifle-Bird. When I came to the spot at which I had previously located a pair of Rifle-Birds, I heard their note again, and there and then decided to climb up and examine some of the stag-horn and bird-nest ferns which grew on the tree from which I had flushed the female, but without success. The female Rifle-Bird is a regular strategist; she fools and beguiles the unwary enthusiast into following her about a quarter of a mile, till she has him exasperatingly enmeshed in a tangle of lawyer vines, and then with a turn of her tail she wheels and darts back in a direct line, leaving her victim talking bad French and picking thorns out of his tortured anatomy. This has often been my experience. On the way back to Atherton I saw several small "willie-willies" or whirlwinds taking dense columns of red dust up into the air from the heat-dried roads. In conversation to-day with Mr. John Donald Ross, who has been at work in the cedar scrubs at Evelyn, on the Herberton Range, estimating the standing cedar, &c., for the Government, I learned that he had when there seen many of the Golden Bower-Birds and found a number of their large play-grounds of sticks; in fact, when I was in the Evelyn scrubs a few days before, I had been close to the place where they existed and had not been aware of the fact.

24th November.—I was in the scrub again at the early hour of 5.30 a.m. I worked back along the timber track till I arrived at the spot where the Rifle-Birds baffled me the day before.

Here I took up my position for another long watch, and was just settling down to it when the female flew past about 15 feet over my head and alighted on a limb close to a clump of bird-nest fern. At first I took it to be a Bower Shrike-Thrush (*Collyriocinclla boweri*), but the long, curved bill revealed it as a female Victoria Rifle-bird. The time seemed to pass slowly, yet, timed by my watch, it was only a quarter of an hour that she sat on her perch and ruffled and cleaned her plumage in a way that convinced me that she was just about to take to her nest. The psychological moment came when she swiftly disappeared into the hollow of a bird-nest fern behind her. I felt sure I had really found the nest, and it was my first find of a long-coveted and rare species. For nearly 20 minutes I kept my eyes on that patch of fern, and the bird never left it, so, feeling satisfied that it was in truth the locality of the nest, I walked over and struck the tree a smart blow with my tomahawk, but no bird flushed. Finally I cut a long, thin sapling, stripped it, and reaching it up, rustled the leaves of the fern-clump, and then, to my delight, out flew the bird, like a flash, into the scrub. I at once lashed my mirror to the end of the sapling, and held it over the centre of the fern-clump, endeavouring to get a reflection of what was below, but the exact angle was hard to obtain. However, at last, after much patience and many shiftings of the small mirror to all conceivable angles, I got one flashing glimpse of two eggs. Up the tree I sprang, forgetting heat and fever and everything else, and was rewarded with a pair of handsomely striped eggs, very like those of the New South Wales species (*P. paradisea*), taken by me in the Richmond River scrubs in November, 1899, only a little smaller. The nest was situated about 25 feet from the ground, was not very large, and had been rather loosely constructed of dead leaves, rootlets, &c., and closely resembled that of the Bower Shrike-Thrush, previously referred to, save that it was much less compact. It measured about 7 inches across, and the cup part was about  $2\frac{1}{2}$  inches deep; the lining was similar to that of the nest of the New South Wales species above alluded to, and comprised fern-roots and thin yellow fern-stems. There was no cast-off or "sloughed" snake-skin about the fern-growth, but on the nest itself there was a small portion of one, and under the eggs I found several large belly scales belonging to a cast skin. The nest was also decorated with green sprays of a climbing fern (*Polypodium*), the leaf of which is small and thick and similar to that of the fern used in the same way by the New South Wales species. It is a fern which creeps upon and clings to the trunks and branches of the scrub trees. The eggs were somewhat incubated. The ground colour is of a pale flesh-pink, the markings consisting of longitudinal streakings of rich reddish-brown and purplish-brown. The measurements are :—(a) 1.32 x 0.87 inches; (b) 1.27 x 0.87 inches.





Bower or Play-ground of the Golden Bower-Bird (*Prionodura newtoniana*), Evelyn Scrubs.

25th November.—Nothing of special interest to note.

26th November.—I visited the scrub on the hill near Maund's Road, a few miles from Atherton. Everything was damp after the recent heavy shower, and birds were plentiful. Found nest of the Lesser Pitta (*Pitta simillima*), which contained three eggs. Found more play-grounds of the Tooth-bill, but they were mostly in an untidy and very neglected state.

27th November.—In the morning I was packing up my camera and paraphernalia for my start again to-morrow for the Evelyn scrubs, on the Herberton Range. At noon I went off on foot and visited the scrubs between Atherton and Tolga, where I found the nests and eggs of the White-headed Fruit-Pigeon (*Columba leucomela*), Coachwhip-Bird, Ashy-fronted Fly-Robin, &c. Later on, when going through the partly cleared land on Halloran's Hill, I noticed numbers of dead, ring-barked scrub trees, known locally as Johnstone River hardwoods, and in these, high up amongst their dead and leafless tops, I both heard and observed quite a number of Tooth-bills. They were all busy rendering various cries in conjunction with their own loud and sudden characteristic "chuck." This procedure was something quite novel for me, and I came to the conclusion that these birds were collecting the small dead twigs from the tops of these tall trees for the purpose of nest construction. They frequently flew from the trees into the scrub about a quarter of a mile away. This was the first time I had ever seen these birds out of the scrub proper. I presume that this would prove to be their habit after they had all won mates and started upon the important responsibility of nesting. Their play-grounds in the adjacent scrub revealed to me sufficient proof that it was now the height of their breeding season, as nearly all those examined were untidy and unoccupied.

When in this scrub I found a nest-mound of the Brush-Turkey (*Catheturus lathamii*), and, after a warm bit of work in digging it out, found no eggs.

To-day (28th November) I again met Inspector Malone, of the Cairns Police, who was on an official visit to Atherton. Mr. Malone kindly gave Sergeant Lawrence, of the local police station, permission (through the letter which I held from the Commissioner of Police of Queensland) to despatch a constable to inspect any bird shot, necessary for identification or in the interests of research, during my absence.

#### HERBERTON.

At 7.30 a.m. on 29th November I was on my way to the Evelyn scrub, for the special purpose of taking a photograph of one of the huge bowers of the Golden Bower-Bird. (*Vide* illustration.) After a 12-mile drive through fragrant forests of lemon-scented eucalypts, and passing a number of aborigines on the way, I safely arrived at Evelyn three hours later. Here

I met Mr. Geo. Sharp, who kindly accompanied me to the nearest bower, which was several miles away, our dusky body-guard of about a dozen natives making pace ahead of us. After a long and rough walk through forest and scrub, over creeks and rivers, &c., we arrived at the desired spot at 5.15 p.m. The light was at this hour so dull in the scrub that it was impossible for me to see any detail of my subject on the focussing screen of the camera. However, I focussed by the aid of a lighted match held near the front of the large bower. At the same time I asked the natives to cut down some of the smaller bushy-topped trees that stood near, thus admitting more daylight. I made four long exposures from different angles, and in each case placed some natives by the bower, they acting, of course, as a scale to the whole subject. After taking a few more photographs of other subjects, we moved towards home, where, after a long tramp, we arrived at 8.15 p.m. During a part of the journey in the scrub the natives collected bundles of bark, which they lighted, and, by carrying these like torches, enabled us to get along with much greater ease than would have been the case otherwise. Here and there I would break the monotony of the dark walk by stopping and hitting a large tree with a stick, and then, to the intense amusement of the blacks, imitate (by ventriloquism) a voice within it.

The bower of the Golden Bower-Bird which I photographed covered an area 14 feet by 6, and in the centre the pile of sticks was over 4 feet high. The whole structure appeared to have no symmetry at all, most of the sticks being piled up about the upright stems of small trees. In the decorations there were large quantities of a long, stringy forest moss, varying in colour from a yellowish-green to a rich rust; I also saw numbers of open pods each containing a black seed, the latter in most cases being covered with a red skin, which was, however, in a state of decortication. In front of the bower and close to the ground hung a vine (*Vitis*) in swing form, and this in all probability afforded a swing for these beautiful birds during their play at the bower. I believe the photograph here represented of one of these bowers is the first that has ever been published.

#### EVELYN SCRUBS, HERBERTON RANGE.

To-day (30th November) I took several photographs illustrative of the aborigines of the district. (*Vide* group.)

Mr. Geo. Sharp kindly gave me a rather flat and loose nest of sticks, which he stated belonged to the Tooth-billed Bower-Bird, and from which two young birds had recently flown. This nest (with others of its kind which I found containing eggs) is now in the possession of Mr. White, at Belltrees, N.S.W. I gathered from a conversation with Mr. Sharp to-day that up to date he had taken one set of Tooth-bill's eggs.



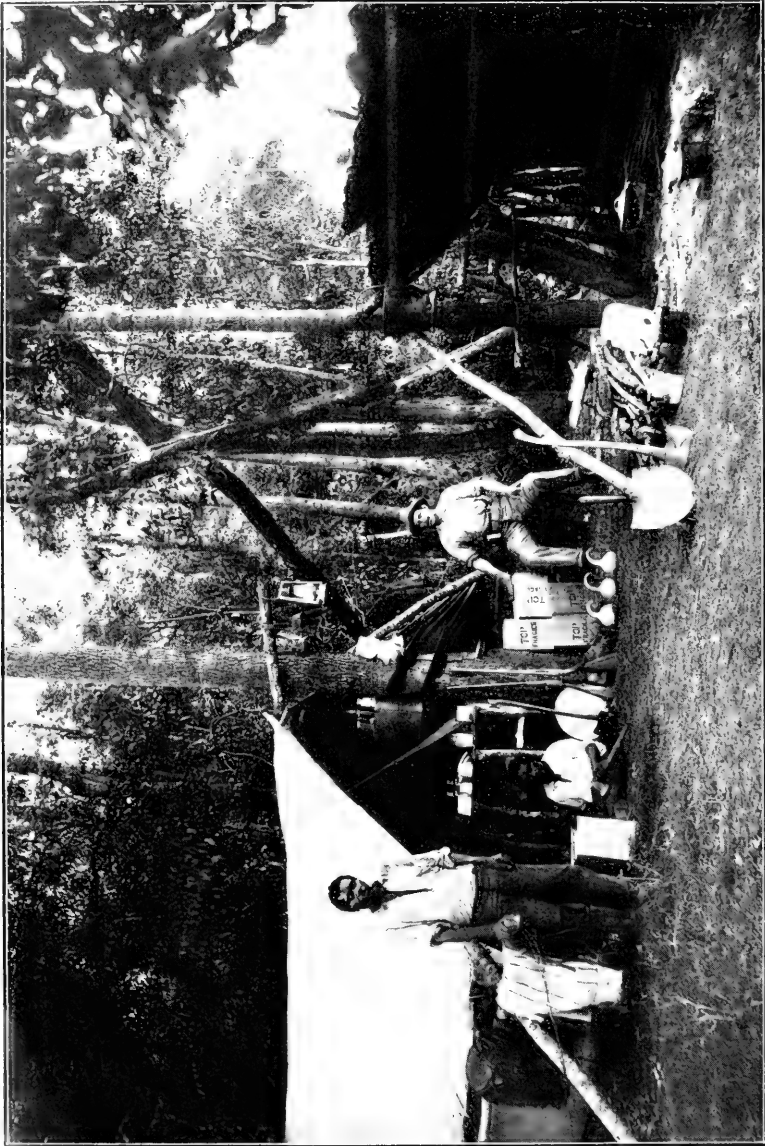


Older Aborigines of the Herberton Range District.  
(Dense scrub at rear characteristic of the haunts of the Tooth-billed and Golden Bower-Birds.)

FROM A PHOTO. BY S. W. JACKSON, SYDNEY.







"Cherra-chelbo" Camp, on the edge of the Tinaroo Scrubs, about 75 miles south-west of Cairns.

## HERBERTON AND ATHERTON.

1st December.—Arrived at Herberton this afternoon from Evelyn, and at night developed the negatives taken in the scrubs there.

2nd December.—Was up early, washing and drying my precious negatives. Then, packing up, I left for Atherton, where I arrived in the afternoon, after a dusty trip over the range.

Arrived at Atherton to-day (2nd December) from Evelyn scrubs, *via* Herberton. At 1 p.m. I drove to my camp at Tinaroo—a long, dusty drive—in order to see Mr. Frizelle and ascertain if he had succeeded during my absence in finding any more nests of Tooth-bills we had located, and was very delighted to learn that he had. I returned to Atherton before dark.

As my space is becoming limited, I recognize that I shall have to reduce my numerous notes to a statement of mere facts, thus reluctantly leaving out interesting matter not directly affecting our feathered friends the Tooth-billed Bower-Birds.

3rd and 4th December.—Visited the scrubs close to the township, and found the play-grounds in nearly every case to be in a very neglected condition. Most of the birds are now up in the trees.

## “CHERRA-CHELBO” CAMP, TINAROO SCRUB.

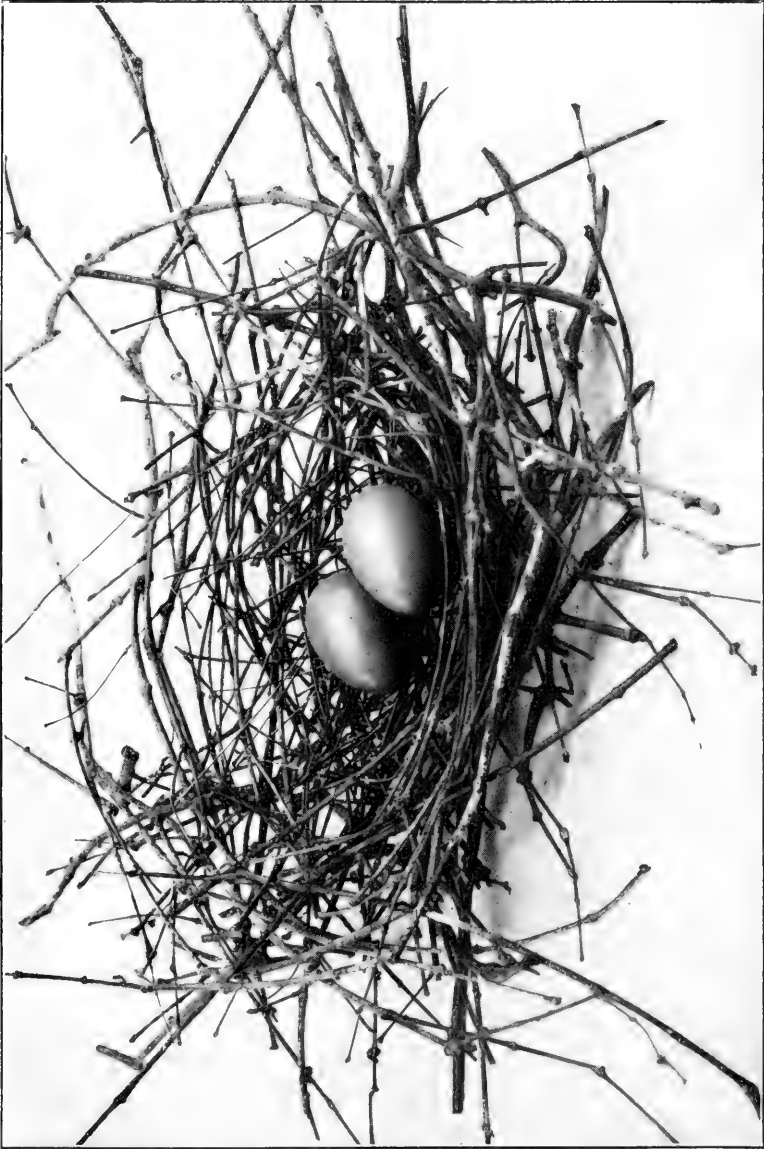
I arrived here again to-day (5th December) from Atherton, and found that during my absence Mr. Frizelle had shifted camp across the Barron River to a point of land better suited for our purpose, and close to where we found our first nest (No. 1) of the Tooth-bill being built on 14th November. The camp now bears the above name, after the aborigines' name for the curious Tooth-bills, now building their nest so close to our camp. During the early part of November we had located a pair of the birds in a belt of scrub, and between two tracks, at a distance of about a quarter of a mile to the south-east of the camp. However, acting on my instructions on the day of my departure from the camp for Evelyn (on 14th November), Mr. Frizelle, with the assistance of our natives, set to work the following morning to thoroughly examine that locality. The scrub was divided into strips and the trees marked; then the business of tree-climbing started in real earnest, the natives and Mr. Frizelle climbing and examining the trees nearly every day, but it was not until this afternoon (5th December) that a nest was found. In that time hundreds of trees had been climbed and closely examined. The nest (No. 2) was a frail saucer-shaped structure, and contained one young bird covered with brown down and appearing to be about three or four days old. The Tooth-bills became very excited, and actually flew at the native

when he was removing the nest, which was hidden in a dense mass of vines and other vegetation at an altitude of 75 feet, and, of course, absolutely invisible from the ground. We took the young bird to camp, where it was well cared for and fed on bruised scrub-figs and sugar for several days, when it was photographed. (*Vide* Plate XXII.) Unfortunately, it died one wet night, notwithstanding all our careful nursing; I then preserved it. I could not detect any serration in the bill, which was then too young and soft. The nest was scrupulously clean, which seems rather remarkable, considering that it contained a young bird. But we discovered the reason when we had kept the youngster in camp for a few days. The nest was frail and comparatively small, and had to be handled with great care. Diameter of nest, 7 inches. It somewhat resembled the nest given to me by Mr. Geo. Sharp, only ours was very much more saucer-shaped and deeper. Fire-flies are plentiful around the camp. The natives have constructed a sleeping place for themselves about 100 yards from our camp. During my absence two nests of the Rifle-Bird were discovered, both containing young birds.

6th and 7th December.—Fever again very bad on me, consequently not much work done, except getting in readiness for my oological and photographic work.

8th December.—Success at last. Mr. Frizelle, our best black, and myself march in a hopeful procession to the tabooed scrub at the rear of our camp. On arriving at the tree in which we found No. 1 nest being built on the 14th November, we sit on the ground for some time looking up into the mass where our long-looked-for trophy rests at an altitude of nearly 80 feet. At last we see a Tooth-bill arrive, alight on a limb, and gradually hop along until it vanishes into the treasured clump. We wait patiently, but so excitedly that minutes seem like hours.

Now we prepare for our climb, the native keeping a few feet ahead of me until I am abreast of the nest, when off flies Mrs. Tooth-bill, nearly striking me in the face. She then hops and flies excitedly about in the limbs close by, with all her feathers puffed, and uttering a peculiar and unusual cry. The male bird acts likewise, having put in an appearance almost as soon as the female quitted the nest. After carefully watching this arboreal and excited dance, I slowly lift my head, and at last!—yes, at last!—my eyes actually rest upon the frail stick nest, which contains two lovely very dark cream-coloured eggs. I can scarcely realize the situation, my excitement being so great. I am trembling like a leaf from head to foot. That which has haunted me day and night—the principal object of my mission to North Queensland—has been at length discovered, albeit through honest toil and perseverance. All I can see of Mr. Frizelle when I look down from my high perch is his



Nest and Eggs of Tooth-billed Bower-Bird (*Scenopæetes dentirostris*).  
Discovered building by S. W. Jackson and E. D. Frizelle. Tinaroo Scrubs, 14/11/08; eggs taken 8/12/08.  
(Nearly half natural size.)









(Left)—Taking first set of Eggs of Tooth-billed Bower-Bird, Tinaroo Scrubs, 8/12/08.

(Right)—Taking last set of Eggs of Tooth-billed Bower-Bird, Tinaroo Scrubs, 22/12/08.

(NOTE.—Crosses denote position of nests in "Now-ii" (native name) vines.)

excited face, as he nervously calls—"Be careful; be very careful of them." After a rest, and when the excitement has abated somewhat, I set to work and carefully remove those rare brown specimens from the frail nest, and place them, well wrapped up in wadding, in my leather egg-pouch. Then, as I have fixed and focussed my camera ready to take a photo. before I started my climb, I sing out to my ground mate to act as operator, and in a few seconds (15) the photograph is secured, showing the tree and the climbers, also position of nest. (*Vide* illustration.) The native brings the nest down for me in his usual careful and faithful way, and not a stick is out of its place when he hands it to me. Now on the ground, a firm grip of hands is made and congratulations exchanged. We are all excited, and the poor old "nigger" appears to be quite overcome with joy, because I have at last been rewarded. We then return to camp, where we find ourselves happy men.

The eggs were quite fresh, so I timed my visit fairly accurately. After blowing them, they were safely packed up and locked away. The nests I had expected to find more like those of the Cat-Bird, whereas they really more approximate those of the Regent-Bird (*Sericulus melinus*). I was pleased beyond measure to find that although the eggs do resemble those of the Spotted Cat-Bird, there is an unmistakable difference both in the depth of the colour and texture of the shell—the latter point, in my opinion, being the more important. When these unique eggs are placed side by side with the commoner and much paler eggs of the Spotted Cat-Bird, the difference is most noticeable. On the other hand, if this colour should even fade away, there is always the unmistakable, unchanging evidence in the shell. To separate these eggs only requires a casual glance of an eye quite untrained in oological matters. When examined at night in gas or candle light the difference between the two eggs is even more pronounced. The pair of Tooth-bills which has been frequently quoted in the preceding pages of this article as being behind our camp, to which the pair of eggs now under notice belongs, is the identical pair which I watched for a whole day, on one occasion, with the field-glasses. The eggs measure—(a) 1.58 x 1.10 inches; (b) 1.57 x 1.09 inches.

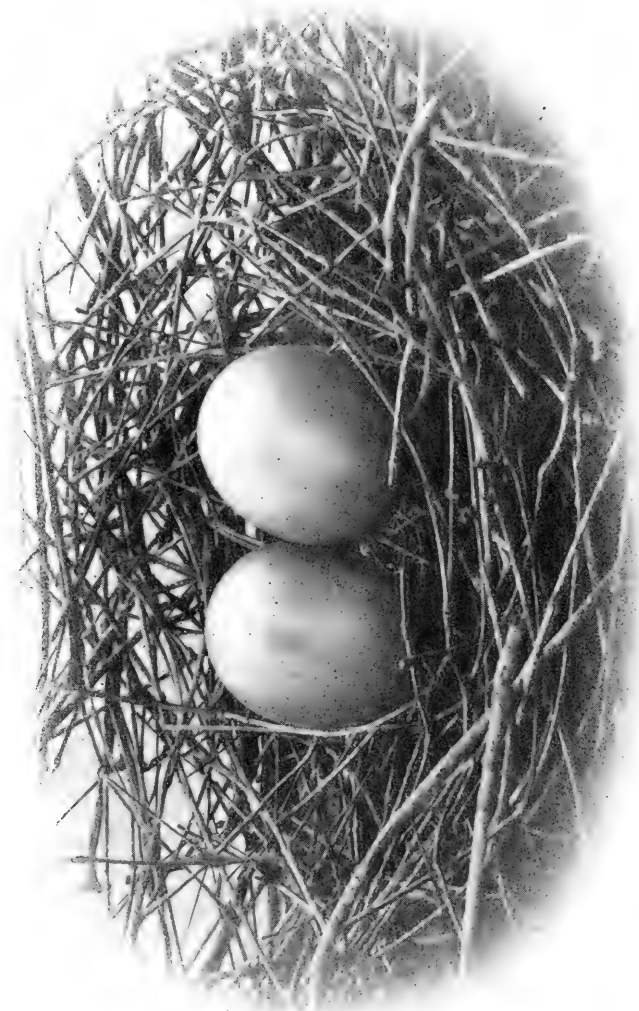
It is a common sight now to see the Tooth-bills up in the trees—their play-grounds are, in the majority of cases, in a neglected and unkept state.

To-day (9th December) I found my first nest containing eggs of the Large-billed Shrike-Robin (*Eopsaltria magnirostris*), which was built in a tree close to the back of the camp. Eggs two, very like those of *Eopsaltria australis*, only smaller, and such is the case with the nest. This bird confines itself to the forest, rarely going in or near a scrub. This case is an excep-

tion. Fire-flies quite illuminated the environs of the camp last night; they were very numerous.

After lunch we start for another nest (No. 3) of the Tooth-bill, about a mile from the camp. The nest is placed fully 90 feet from the ground, in a mass of dense vegetation at the top of a bean or scrub chestnut-tree (*Castanospermum australe*). The climb is an awkward one, and our best black, who had examined the nest in the first instance, is again chosen to tackle the task. Strapping the egg-pouch around his waist, I say "Good luck!" and up he goes. Placing the perpendicular and suspended vines between the first and second toes of each foot, he simply walks up, with marvellous and untiring agility. Making his way through the masses of vines and foliage near the top, he at last gains the rare nest, and suddenly exclaims—"Two pfeller heg sit down!" This is really splendid news, following on the success of yesterday. With the glasses I see the bird fly from the clump where the nest is so securely hidden. It goes through the same fuss and noises and darting actions close to the climber as we noticed at the other two nests. Mr. Frizelle now climbs nearly half-way, meeting the darkie and taking the pouch from him containing the treasured "brown eggs," while the latter brings down the nest. The nesting tree is photographed, and by nightfall all reach camp safely. This set is also very dark, and quite different from those of the Cat-Bird. In fact, these eggs photograph quite dark, owing to their deep yellowish or creamy-brown tinge. Spotted Cat-Birds' eggs photograph lighter in tone because they are paler in colouration compared with those of the Tooth-bill. These important facts are clearly demonstrated in the photographs accompanying this article. Of this clutch (from No. 3 nest) the following are the measurements in inches:—(a) 1.63 x 1.08; (b) 1.59 x 1.08. Nest, as usual, loosely constructed of dead twigs, and measuring nearly 9 inches across. The centre or egg-cavity is deep and saucer-shaped, and the lining consists of thin dry twigs, interwoven with the thicker ones on the outside.

We find another nest (No. 4) of the Tooth-bill to-day (10th December) belonging to one of our already located and long-watched pairs of birds. It is placed at the summit of a crow's-foot elm (*Verbenacæ?*) near the bank of the Barron River, and at an altitude of over 50 feet. Nest about half built. Proceeding, and carefully watching another long-located pair, we find their nest (No. 5). Wonderful success! This is placed unusually low down, being within 45 feet of the ground. A climb of inspection is made, and a slight disappointment is experienced. The darkie cried out "One pfeller picaninnie (young bird) sit down." The nest, as usual, frail and well hidden, the nestling being covered with brown down and precisely similar to the first young one which we discovered on 5th



Nest and Eggs of Tooth-billed Bower-Bird (*Scenophaea dentirostris*). (Nearly natural size.)  
Taken Tamaroo Scrubs, 9/12/08.







Nest and Eggs of Victoria Rifle-Bird (*Ptilorhis victoriæ*).  
Found at "Cherra-chelbo" Camp, Tinaroo Scrubs, 11/12/08. (More than half natural size.)



December. The pair of birds belonging to this latter nest had been watched for a few hours nearly every day since the 29th November.

Tooth-bills now all very silent, and more especially those which possess nests. To-day I photographed the nests and eggs of the Tooth-bill, also one of the young birds sitting in its frail cradle, developing my negatives on the floor of the tent at night after all damper-cooking, &c., was finished and the camp-fires extinguished. The developed plates I stand on a ready-made rack—stones—in literally the "running water" of the Barron. In 30 minutes I reckon they are thoroughly washed. I always use photographic tabloids.

This morning (11th December) I was awakened very early again by the notes of a Tooth-bill which has lately been in the habit of roosting in a small tree leaning over our tent. It belongs to one of our most recently located pairs of birds, and the nest we hope to find shortly. "Willie-willies" are numerous, and if one strikes our tent—then it is a case with us. To-day we found a well-hidden nest of the Victoria Rifle-Bird in a thicket of leafy vines on a tree not 20 paces from the head of my bunk. The eggs—a pair—were slightly incubated; they are really most handsome specimens. (*Vide* illustration.) The nest was lined with the needles or leaves from the river oaks (*Casuarina*) which grew about the camp, and was placed 27 feet from the ground. It was secured, with much difficulty, by rigging a long, heavy pole, supported by three strong vine guys. The eggs measure—(a) 1.31 x 0.93 inches; (b) 1.29 x 0.93 inches. The local blacks know this bird as "Eur-a-lum," and when the dusky climber saw the two eggs in the nest he cried out—"Ma whord, pretty pfeller heg sit down." We often heard these Rifle-Birds about the camp, but, as our whole time and attention were concentrated on the exasperating Tooth-bills, we had overlooked the Rifle-Birds before. It is most interesting to note that the pair of eggs which we took of the Large-billed Robin on the 9th December was from a nest situated only 6 feet from the Rifle-Bird's nest discovered to-day. After developing and washing more negatives, it was 1 o'clock in the morning before we retired to rest.

12th December.—The Flycatchers and other birds have become very tame, and now venture right into our tent, picking up crumbs on the ground while we dine, even approaching near our feet.

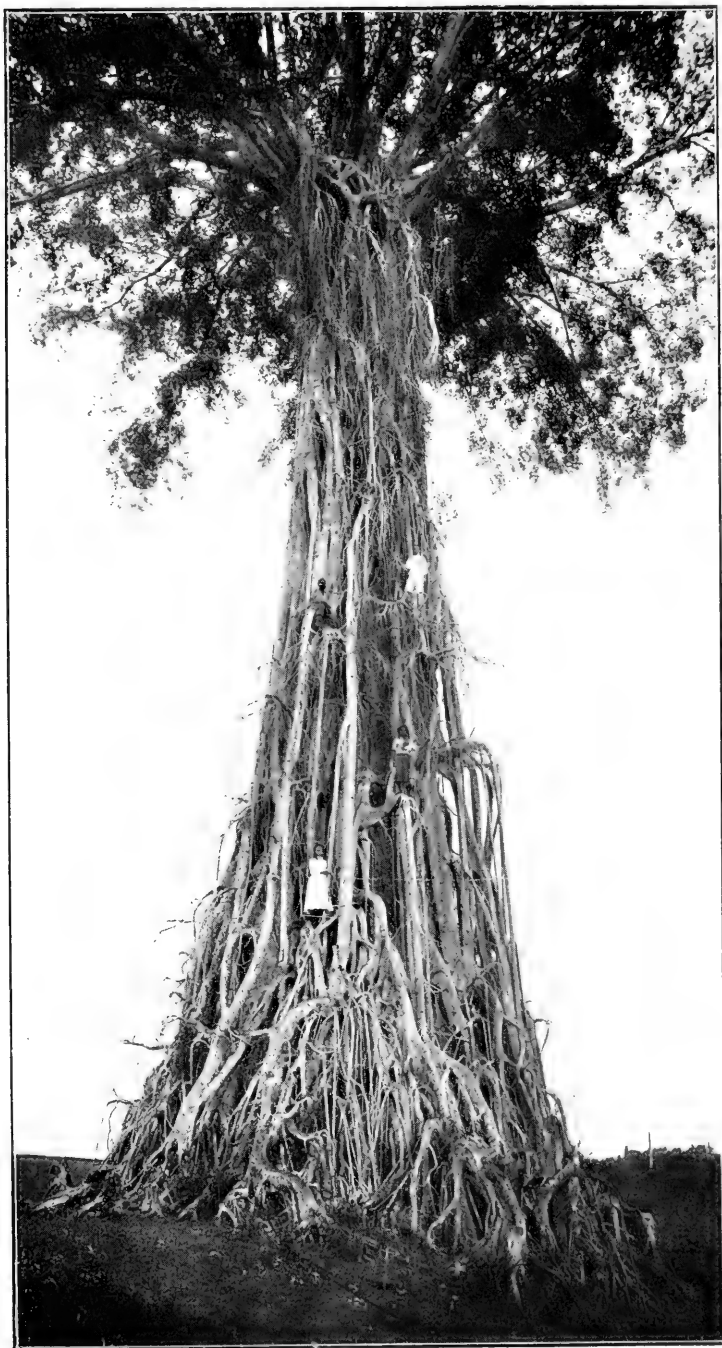
If you are watching a Tooth-bill in the scrub, and it sees you, it immediately stretches out its neck and takes a side glance at you, then in a moment it is off out of sight in the scrub. When flying they usually make a swooping and heavy-flapping sound. In hopping about on the ground and in trees they are experts. I have observed one commence from the ground, then alight

upon a suspended vine, and by a rapid succession of "hops" arrive at the top of the tree. Fearful storm to-day, which interfered with my photographic work and played havoc with our camp.

To-day (13th December) I photographed the neat play-ground (one of the few now occupied) behind our camp (*vide* Plate XXIII.), the property of the male bird of nest No. 1, robbed on the 8th December. While busy fixing my camera the male Tooth-bill suddenly became brave, and flew into the vines above my head with a snail-shell (*Helix macgillivrayi*) in his bill. Then he was off in a flash. Again he returned, uttering a scolding cry, such as he and the female had made when I was removing the eggs from her nest. In the play-ground I found a stone surrounded with many freshly broken shells of scrub-snails, the bodies of which these birds evidently sometimes feed upon. Perhaps Mr. Tooth-bill wished me to quit the spot in order that he might get at his little stone-anvil. After the photograph had been taken I visited the bower belonging to the female bird, which was not far away, but it was full of dead leaves and neglected, so I left it. Found a new nest of the Victoria Rifle-Bird being built. The darkie stated that "Leep only sit down yet," meaning it had only just been started, and contained simply leaves. Another severe and destructive storm was experienced.

14th December.—The scrub is now exceedingly close and humid after the heavy rains, and is full of fever. Everything in the camp—food, clothes, tent, &c.—gets covered, in one night, with green mould (*Penicillium*).

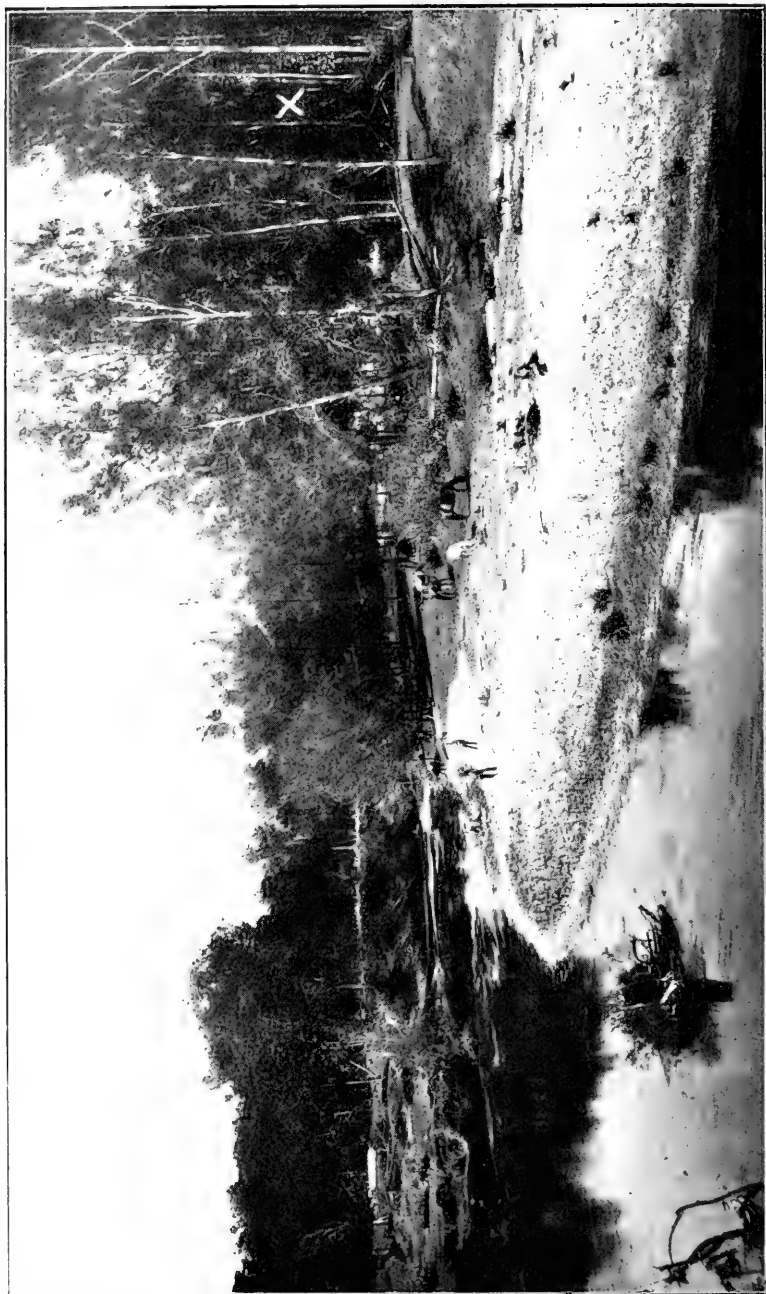
In the upright roots of the huge parasitical fig-tree at the rear of the camp—a forest giant measuring 60 feet through a few feet from the ground—we flushed several Sooty Owls (*Strix tenebricosa*), and found what we took to be their old nests. I had already photographed this tree, and the illustration which is given here shows a much smaller one of the kind, which, being situated away from the scrub on cleared ground, made a better subject for the camera. When going through the scrub this morning, at a part which one of our most recently located pairs of Tooth-bills frequented, I noticed one of the birds fly up on to the limb of a tree situated about 30 yards to our left. On sighting her I signalled to Mr. Frizelle to sit down and watch her. It was very warm, and the bird sat for a long while motionless on the limb with her bill open. The manner in which the bird arrived and departed led me to believe that she had really come from a nest. So a little later Mr. Frizelle and I walked slowly and cautiously over to the trees from which she appeared to have flown, and eventually we struck a likely one only 40 yards to the rear of our camp. It was a bean or scrub chestnut-tree, and thickly overgrown with a large-leaved creeping plant.



Scrub Fig-tree on cleared area, Tinaroo.  
Feeding tree of Channelbill Cuckoo and other birds.







On the Barron River, Tinaroo. (Cross on right denotes position of "Cherra-chelbo" Camp.)

Mr. Frizelle undertook the climb, examining every nook and corner in the foliage as he went up, and when nearly fifty feet from the ground discovered a new and hidden nest of the Tooth-bill, which was nearly ready for eggs. Our excitement fairly bubbled over! The nest was somewhat larger than the others of its kind already discovered, and was composed of nice fresh, clean twigs, quite dry. This was nest No. 6, and it belonged to a pair of birds which we had watched very closely of late, the male of which used to give his evening and early morning serenade in a tree over our tent. The vine or creeper which enveloped the top of the tree containing the nest is known to our natives as "Now-ii." The reason why we could now find the nests was simply because we had lived among these shy and curious birds, and had thoroughly studied their habits, watching them from daylight until dark. Had another fearful storm to-day. The Barron River is rising rapidly, and if it continues at the present rate our camp will be swept away, unless we remove to the hills, but to do that would be impossible, as we would be compelled to carry all our belongings through the swiftly running waters of the river. Fire-flies in hundreds still dance around the camp at night.

Was up early again this morning (15th December), and found the tent and everything covered with green mould. Fancy a man living in this humid and fever-stricken atmosphere! Took several more important photographs again to-day. Visited the new nest of the Victoria Rifle-Bird, and found the storm had greatly knocked it about. Found another of these nests to-day containing a dead and decayed young bird. Developed and washed negatives, retiring at 1.30 a.m.

16th December.—Weather improving, and the waters of the river are fortunately subsiding. The river winds round us in the form of a U, therefore our camp is on a scrub-covered peninsula, fringed on the point with river oaks (*Casuarina*). We have lately taken the eggs of the Scrub-Fowl (*Megapode*) from mounds situated in proximity to our camp. Raining again. Very few Tooth-bills at their play-grounds to-day. Altogether I have found and inspected to date 193 perfect play-grounds of this bird. Saw many large trees in the scrub which had been snapped off at the roots during the recent storms.

17th December.—My dark servants showed me to-day a tree which they call "Boo-jar-ee." It has very tough bark, which is used by them for twine and net making. I used its fibres often as bootlaces when working the scrubs. We visited nest No. 4 of the Tooth-bill again to-day, in the crow's-foot elm-tree, about a quarter of a mile from the camp, but found it empty and no birds about. We hoped that the storms had not caused them to abandon it; the nest was a little tilted. It is now just a week since we found it being built. Found a small dome-shaped

nest to-day containing a tiny scrub opossum, the smallest of the species which I have ever seen; in the pouch I found a young one. The parent measures only 6 inches long, and the tail is about the same length. Fur is brown in colour, and around each eye there is a black circle. I could not find it figured in Gould's work on "The Marsupials of Australia."

During my absence in Evelyn and Atherton, Mr. Frizelle and the three natives paid a hurried visit to the scrubs on the Tinaroo Mountains, and at an elevation of nearly a thousand feet above our camp they found the huge bowers of the Golden Bower-Bird. The country there is exceedingly rough, and is about 8 miles from our camp. The object of this side mission was for the purpose of selecting one of the huge play-grounds for a photograph, in case my visit to the Evelyn scrubs had failed. However, I was successful in the latter place, and consequently my journey to the Tinaroo Mountains was unnecessary.

I learned to-day from the natives that the large seeds or beans which are taken from the pods of the scrub chestnut-tree (*Castanospermum australe*) are utilized by them as a food, which they call by the name of "Jung-era," the tree itself being named "Wag-ee." A large fresh-water turtle or "Budg-e-gul," from the river, visited our camp to-day.

Saw another nest to-day (18th December) of the Victoria Rifle-Bird, from which the young birds had recently flown. This belonged to one of our long-watched pairs of Rifles, but which had completely baffled us. Saw pipe-calabashes growing along the edge of the scrub to-day. The vine is like that of a marrow, the blossom white; three of these hard-cased gourds are shown on the ground in the illustration (Plate XXXI.) of my camp. Most persons are familiar with the match-box bean (*Entada pursaëtha*, De C.), which is found in huge flat pods, sometimes 5 feet in length by about 4 inches in breadth, and containing as many as 18 beans. But probably few persons have seen the vines growing. They bear a somewhat small, glossy leaf, and one vine will often envelop many acres of scrub. Near Mount Dalrymple, in the Pioneer River district, I saw the butt of one of the vines thicker than a man's body. On my return to Sydney, the State Governor, Sir Harry Rawson; K.C.B., accepted one of these large pods, which he took to England as a memento of my North Queensland trip.

Pheasant-tailed Pigeons and Red-winged Lorries (*Ptilistes erythropterus*) very plentiful, and feeding in company on the introduced ink-weed (*Phytolacca dioica*), the berries of which constitute food for so many different kinds of birds. Cuckoos are very scarce, excepting, of course, the Koel and the noisy Channelbill, which is always ready to break silence. Rose-crowned Fruit-Pigeons (*Ptilopus ewingi*) are plentiful, and







Last found Nest and Set of Eggs of Tooth-billed Bower-Bird (*Scenoplectus dentirostris*), Tinaroo Scrubs.  
(NOTE.—On account of the strong "top-lighting" the eggs appear lighter in colour than they naturally do.)

FROM A PHOTO. BY S. W. JACKSON, SYDNEY.

we have found a number of their nests and eggs. The natives know the bird as "Men-in-gee." Again we retired very late, dead beat.

19th December.—Very bad with cramps in the legs, due, no doubt, to kneeling so much on the damp ground while developing photographic plates.

The female Tooth-bill belonging to the new nest (No. 6) behind the camp flew down to-day from it, and sat in a bushy tree, where she stretched out her neck and peered down sideways at me for fully half an hour. During all this time she remained perfectly motionless. I never saw a bird do such a thing before in my experience; it was almost incredible, and shows how cautiously alert these birds are when they have a nest. I fancied that there must be at least one egg in the nest by now. Saw a young Tooth-bill, which was rather well feathered, being fed by the parents as it sat on the limb of a tree.

20th December.—Up early and had a morning dip in the Barron. We visited the new nest (No. 6) of the Tooth-bill, behind the camp, to-day, and to our delight found it to contain one of the rare "brown eggs." When the bird flew from the nest she immediately let herself fall straight down, just as if she had been shot, and when within a few feet of the ground righted herself and flew horizontally through the undergrowth. In my opinion, authentic eggs of these birds will always be rare, and when found should at least be accompanied by the nest intact. This is one way of verifying the authenticity of the find. No other known bird in Australia makes a nest like that of the Tooth-billed Bower-Bird. The same applies to the eggs of the latter, and, as I stated before, the eggs of the Spotted Cat-Bird (*Elurædus maculosus*) are the nearest approach to them.

Nothing special to note for yesterday; but to-day (22nd) was most eventful, as we visited nest No. 6 of the Tooth-bill, behind the camp, and won another pair of those rare "brown eggs," which were quite fresh. (*Vide* illustrations.) The bird did not quit the nest until the native got within a few feet of her. That they sit close I have now substantially proven. We cut down the limb and vines containing the nest, and then, replacing the eggs, photographed the lot *in situ*. This pair of eggs, the darkest, longest, and most pointed of the three sets we have taken, measures in inches—(a) 1.68 x 1.09; (b) 1.67 x 1.09. The "Now-ii" vine or creeper which covered the greater part of the bean-tree (*Castanospermum australe*) from which we took the latter nest and pair of eggs grows a long flat pod which is covered with a golden silky fur. These pods when ripe contain from three to four hard jet-black seeds, measuring an inch in diameter. The leaves of the vine are very large, and are divided into three sections. We then visited nest No. 4 belonging to the Tooth-bills, which was in a crow's-foot elm on the bank of the river.

This nest, first found being built on 10th December, appears now to be deserted. I cannot understand why, unless the "tilt" which it had, presumably the result of the recent storms, forced the birds to quit it. Found a nest of the Flower-pecker or Mistletoe-Bird (*Dicaeum hirundinaceum*) to-day close to the camp. *Sphecotheres stalkerii* is plentiful.

To-day (23rd December) I visited a large play-ground of the Queensland Bower-Bird (*Chlamydodera orientalis*), which was situated in the open forest country about 10 miles from the camp. After waiting patiently for some hours for a cloud to come along and obscure the too powerful rays of the sun, I secured my photograph. (*Vide* illustration.) The bower was beautifully situated under a blossom-laden bush of the pink *Bougainvillea*. Here some 25 years previously, during the Herberton gold rush, stood a half-way house, long since burnt down. The old jam tin which will be seen on the right in the photograph will be useful in acting as a scale to the picture. The decorations consisted of glass of various colours, bones, lumps of red resin from the eucalypts, seeds, flowers from the *Bougainvillea*, and numbers of bleached snail-shells, &c. In the passage of this bower I noticed numerous pieces of small, flat glass, which the birds had placed between the upright sticks, in precisely in the same way as we would slip letters under a cord in a letter rack.

Busy photographing nests to-day (24th December). Last night one of our natives met with a sad end. While asleep in his camp a limb of a tree fell and struck him on the head, causing instantaneous death. Falling limbs are one of the greatest dangers to the naturalist while in these dense scrubs. I had to be always on the alert.

By appointment I went to Atherton to-day (Christmas Day) and met Mr. George Sharp, who was on his way to Sydney, having just arrived from the Evelyn scrubs. He informed me that he and his sixty natives had succeeded in finding 30 odd sets of eggs of the Golden Bower-Bird and two sets of those of the Tooth-billed Bower-Bird. I entered into negotiations for the purchase of all the specimens which he and his natives had collected during the past three months in the Evelyn scrubs. This transaction was ultimately accomplished, and these specimens (including types and co-types) are all now in the possession of Mr. H. L. White, of Belltrees, N.S.W. The majority of the specimens, with many others taken by myself, are now displayed in Mr. White's fine Australian oological collection. It was really extraordinary to find that the eggs discovered of the last two species of Bower-Birds should turn out to be devoid of markings! In the case of the Golden Bower-Bird the eggs are of an immaculate white; those of the Tooth-billed Bower-Bird (really a Cat-Bird) are simply of a



Play-ground of Queensland Bower-Bird (*Chlamydera orientalis*), Rocky Creek, near Tolga.  
(Actual measurement, 3 feet in diameter.)



uniform brown, while, on the other hand, the eggs of all the other Bower-Birds of Australia are beautifully marked. There is certainly no doubt, properly speaking, that the Tooth-billed Bower-Bird should now receive its new and much more appropriate title of Cat-Bird.

To-day I found a nest (No. 7) of the Tooth-bill being built in a part of the scrub at which I had been watching the birds for some time past. This nest was placed at the top of a vine-covered tree at an altitude of nearly 50 feet, and, as usual, it was impossible to see it from the ground. When I had climbed up I discovered why these birds were crying out and flying so excitedly about; some 5 feet below the nest, and out on a horizontal mass of vines situated 12 feet from it, was a large carpet snake (*Python spilotes*) coiled among the leaves. I visited the place again a few days later, but nothing more had been done to the nest. The snake had in the meantime vanished, also the birds, therefore I came to the conclusion that the snake's visit had been the cause of the birds deserting it. I forgot to mention that on the ground under one of the nests which we found containing a young bird I picked up a large portion of one of the cast out egg-shells, and it was also of the same brown colour as our other eggs—a proof that these eggs do not vary much in colour. Mr. Frizelle found a nest (No. 8) to-day, after watching the birds and arduously climbing trees for five days. It was placed 75 feet from the ground, and contained one egg, which was left until the 27th inst. Another nest (No. 9) of these Tooth-bills was also discovered to-day, situated at an altitude of 60 feet, and containing one young bird. The pair of birds belonging to this nest had also been watched by us for a long time, without success until to-day, and then too late for eggs. This is the third nest which we have found containing only one young bird, and the question arises, What becomes of No. 2? Is it pushed out of the nest? I fancy somehow that these Tooth-bills fail to hatch both eggs, because their scant and openly constructed nest admits too much air to the eggs, hence one of them frequently becomes addled.

Nothing special for yesterday, but to-day (27th December) Mr. Frizelle and the natives revisited their nest of the Tooth-bill which on Christmas Day contained only one egg. On climbing up, still only one egg was in the nest, and this was taken. The egg measures 1.56 x 1.12 inches. The climb was a most difficult one, the nest being placed 75 feet from the ground in a dense mass of vines and foliage. The native was very displeased at only one egg being in the nest, as I usually rewarded him for each set of two which he climbed up to for us; however, he was compensated in this instance just as if the nest had contained two eggs, and on

receiving his reward a cavernous smile broke out upon his face. On blowing the egg of its contents I discovered that incubation was about five days old, so this proves to us that they sometimes lay only one egg, and such may be the case with the younger birds. Why do so many of our Fruit-Pigeons lay only one egg? Because, I think, the nest is such an open and well-ventilated structure of sticks that if they laid more they would only become addled; the same applies to the three Tooth-bills' nests which we found containing only one young bird each, instead of two. We found to-day that the play-ground (which I had already photographed) behind the camp (*vide* Plate XXIII.) contained several enormous leaves, comprising those of two species of scrub plants. I could hardly have believed it possible that these Tooth-bills could remove and use such large and awkward leaves. One variety was of a round form, velvety, and belonged to a common scrub-vine, and a specimen of it measured  $10\frac{1}{2}$  inches by 9 inches. The other large leaves belonged to the candle-nut tree, which is very plentiful in the scrubs. A sample measured 15 inches by  $13\frac{1}{2}$  inches, being as large as a good-sized pumpkin leaf. This was the only play-ground which we noticed daily adorned with fresh leaves during the height of the breeding season. The owner of this bower was the male bird belonging to the nest (No. 1) which we robbed of two eggs on 8th December.\*

Took more photographs on the 28th December. On rising early to-day (29th) we set to work packing everything for our start to Tolga. We felt satisfied with the result of the work done while camped at this, to us, ever memorable and now historic spot, the site of which is denoted by a white cross which I have placed on the right-hand side of the accompanying photograph (Plate XXXVII.) In the afternoon we have all our numerous boxes, bags, and bundles carried through the Barron River and stacked upon the opposite bank. Before long everything is placed in a farmer's four-wheeled waggon, and off we start for Tolga, where we remain a few days, repacking, and fixing up various matters appertaining to the camp. After wishing good-bye to our many new acquaintances, we take train to Cairns on 5th January, 1909; here my friend Mr. Frizelle leaves me, turning south to Townsville, while on the 7th January I embark on the s.s. *Wyandra* for Cooktown. Leaving Cooktown on the night of the 8th January, the *Wyandra* steams south, touching at Cairns, Townsville, Bowen, Brisbane, &c., on the Queensland coast. Finally, after a long and rather pleasant passage, I safely land in Sydney on the morning of the 18th January, 1909.

\* Since my return to Sydney I received a letter from Mr. Frizelle, who is again in the Tinaroo scrubs. Under date of 30th April, 1909, he writes:—"The Tooth-bills have no playgrounds now, but in every case the young birds are being fed yet, so that may account for it."—S.W.J.







Nest and Eggs of the Stalker Fig-Bird (*Sphcotheres stalkerii*).  
Type, found by S. W. Jackson and E. D. Frizelle, Tinaroo Scrubs, 8/11 '08. (Nearly natural size.)

I cannot close this article without referring to the kindness shown to me by those with whom I came into contact ; in fact, it will always remain one of my most grateful memories. In addition to the courteous help and open-handed kindness extended by persons who were until then perfect strangers to me, I have to acknowledge my indebtedness to the Queensland Government, and to those of its officials to whom I was accredited. The Acting-Premier, the Hon. Andrew Henry Barlow, afforded me every facility, and placed at my disposal every possible assistance which would further the objects of my mission of research. As one especial instance of this, I may mention that the Commissioner of Police instructed the various sub-heads of his department to render me all assistance possible, and the police themselves carried out the orders of their chief with hearty thoroughness, which was of the greatest value to me at more than one juncture.

## Descriptions of Nests and Eggs of Five Species of Birds Found in the Atherton District, North Queensland.

BY SIDNEY WM. JACKSON, A.O.U., CHATSWOOD, NEW SOUTH WALES.

### (1.) SPHECOTHERES STALKERI, Ingram \* (Stalker Fig-Bird).

(*Identification.*—Taken by E. D. Frizelle and Sid. W. Jackson at Tinaroo, 70 miles south-west of Cairns, 8th November, 1908. Female identified.)

*Nest.*—Open, cup-shaped, loosely constructed of twigs, similar to that of *S. maxillaris* ; was placed in a bloodwood (*Eucalyptus corymbosa*), about 50 feet from the ground.

*Eggs.*—Four ; elongated oval in shape ; surface glossy ; texture, fine with slightly raised veins ; colour, pale olive-green, becoming olive-brown on the larger apex, and irregularly blotched with deep red-brown and purplish-brown markings, chiefly distributed over the larger end. On one specimen (*d*) the markings form a cap. Dimensions in inches :—(*a*) and (*b*) each 1.32 x 0.93, (*c*) 1.28 x 0.92, (*d*) 1.18 x 0.88.

### (2.) OREOCICHLA CUNEATA, De Vis (Broadbent Ground-Thrush).

(*Identification.*—Taken by George Sharp, in the Evelyn scrubs, Herberton Range, 2nd November, 1908. Nest inspected *in situ* by Sid. W. Jackson.)

*Nest.*—Usual large, open, cup-shaped structure, similar to that of *O. lunulata* ; placed on top of the remains of a dead bird-nest fern adhering to a tree trunk, about 20 feet from the ground.

*Eggs.*—Two ; elongated oval in shape ; surface, slightly glossy ; texture, coarse, deeply pitted ; colour, pale greenish, covered with dark-red and pale-red blotches and purplish markings, distributed

\* *Ibis*, July, 1908. *Vide Emu*, viii., p. 105.

over the whole surface, but predominating at the larger end. One egg (*b*) has a more bluish tinge in the ground-colour, and the markings generally are paler. Dimensions in inches :—(*a*) 1.38 x 0.92, (*b*) 1.28 x 0.97.

(3.) *PŒCILODRYAS ALBIFACIES*, Sharpe (White-faced Robin)

(*Identification*.—Taken by E. D. Frizelle and Sid. W. Jackson at Tinaroo scrubs, 2nd December, 1908. Female identified.)

*Nest*.—Deep, cup-shaped, constructed outwardly of green mosses interwoven with strips of bark and cobwebs, and lined with dry strippings of the lawyer vine (*Calamus australis*). Width  $2\frac{3}{4}$  inches, depth 3 inches; egg cavity, width nearly  $1\frac{3}{4}$  inches, depth  $1\frac{3}{4}$  inches. Was placed at the intersection of the stalk and leaf of the lawyer vine, about 15 feet from the ground.

*Eggs*.—Two; swollen oval in shape; surface, glossy; texture, fine; colour, clear pale bluish-green, freckled with pale wood-brown, confluent in (*a*) and forming a distinct cap on the larger end, and sparsely scattered over the rest of the surface. In (*b*) the markings are more evenly distributed over the whole shell, forming a zone over the larger end. Both eggs are sparsely marked with black specks over the whole shell. Dimensions in inches :—(*a*) 0.77 x 0.57, (*b*) 0.76 x 0.58.

(4.) *ACANTHIZA SQUAMATA*, De Vis (Scaly-breasted Tit).

(*Identification*.—Taken by E. D. Frizelle and Sid. W. Jackson at Tinaroo scrubs, 11th November, 1908. Female identified.)

*Nest*.—Dome-shaped, constructed outwardly of thin strips of bark, grasses, mosses, and cobwebs, and lined with feathers. Length, 6 inches; width, nearly 4 inches. Was placed 20 feet from the ground in a river oak (*Casuarina*).

*Eggs*.—Three; elongated oval in shape; surface, slightly glossy; colour, white, freckled with markings of red-brown, which are scattered over the shell, forming a cap at the larger end. Nest and eggs closely resemble those of *Acanthiza reguloides*. Dimensions of eggs in inches :—(*a*) 0.67 x 0.47, (*b*) 0.64 x 0.47, (*c*) 0.67 x 0.47.

(5.) *EOPSALTRIA MAGNIROSTRIS*, Ramsay (Large-billed Shrike-Robin).

(*Identification*.—Taken by E. D. Frizelle and Sid. W. Jackson at the Tinaroo scrubs on 9th December, 1908. Female identified.)

*Nest*.—Open, deep, cup-shaped; constructed of dry flat pieces of a sedge-like rush (*Gahnia*, sp.) and strips of bark, and beautifully decorated outwardly with mosses, lichen, and a few pieces of white bark, all neatly fastened on with cobwebs; inside lined with sections of dead, flat, sedge-like rushes and the needles of the river oak (*Casuarina*). Width, 3 inches; depth,  $2\frac{1}{4}$  inches; egg cavity, width 2 inches, depth  $1\frac{1}{4}$  inches. Was placed on the horizontal branch of a tree, 21 feet from the ground, on the edge of the scrub.

*Eggs*.—Two; swollen oval in shape; surface, fine and slightly glossy; colour, pale apple-green, freckled with reddish-brown, and a few markings of dull purplish-grey, all becoming more confluent at the larger ends, where they form an irregular zone. Dimensions in inches :—(*a*) 0.88 x 0.63, (*b*) 0.89 x 0.63.

This Robin frequents forest country of the Atherton and Herberton districts. It seldom goes into a scrub, therefore the above discovery on the edge of the scrub appears an exception to the rule. In the open forest country I found five nests in November (1908); in each case the nest was built in a forest tree several miles from any scrub. Three nests contained each two young birds, while two were apparently nearly ready for eggs.

NOTE.—The foregoing five types of new eggs are in the collection of Mr. H. L. White, Belltrees, Scone, New South Wales.

OBSERVATION.—In my article, “The Barron River Valley,” I omitted to mention the common Miner (*Myzantha garrula*), which I observed frequently in the forest tracts. I do not think this bird has been previously recorded for North Queensland.

## Review.

[“The Confessions of a Beachcomber: Scenes and Incidents in the Career of an Unprofessional Beachcomber in Tropical Queensland.” By E. J. Banfield. With a map and 53 illustrations. T. Fisher Unwin, Adelphi-terrace, London. 1908.]

MR. E. J. Banfield is a member of the A.O.U., and has contributed valuable field observations on birds to this journal,\* therefore his “Confessions” will, no doubt, be read with special interest.

“The Confessions of a Beachcomber” comprises a charming book written in a unique style, partly poetic and partly descriptive of the sights, sounds, and moods of Nature as she discovered herself to the author during his residence of eight years or so on a romantic islet on the border of the coral sea, North-Eastern Queensland. The name of Mr. Banfield’s island-home is Dunk.† It has an area slightly over 3 square miles, is verdure clad from the coral strand to the summit of the highest hill, and is situated 2½ miles from the mainland, in Rockingham Bay—a district celebrated for its ornithological as well as its botanical wealth.

The book contains chapters on all branches of nature-study from ethnology downwards, but this review naturally will deal only with the ornithology of Mr. Banfield’s “Confessions,” which are written in popular and pleasing phraseology. The chapter on birds is divided into various suggestive sub-heads, such as “Birds and Their Rights,” “The Daybreak Fugue,” “The Nestful Tree,” “White Nutmeg-Pigeon,” “The Flame-Trees’ Visitors,” &c.

Here is a bit of the life of the beautiful and lively Varied Honey-eater (*Ptilotis versicolor*):—

“Once aroused, the Varied Honey-eater is wide awake. His restlessness is equalled only by his impertinent exclamations. He shouts his own aboriginal title, ‘Go-bidger-oo!’ ‘Put on your boots!’ ‘Which—which—

\* One of his more important finds was the discovery of a colony of Swiftlets (*Collocalia francica*) nesting in a cavern on Dunk Island. *Vide Emu*, viii., pp. 146-148.—EDS.

† Discovered and named by Capt. Cook after George Montagu Dunk, First Earl of Sandwich, Second Baron and First Earl of Halifax, who was First Lord of the Admiralty at the time of its discovery.

which way—which way—which way you go !’ ‘Get your whip !’ ‘Get your whip !’ ‘You go !’ ‘You go !’ ‘None of your cheek !’ ‘None of your cheek !’ ‘Here—here !’ And darts out with a fluster from among the hibiscus bushes on the beach away up to the top of the melaleuca-tree ; pauses to sample the honey from the yellow flowers of the gin-gee, and down to the scarlet blooms of the flame-tree, across the pandanus palms and to the shady creek for his morning bath and drink, shouting without ceasing his orders and observations. He is always with us, though not always as noisy as in the prime of the year—a cheerful, prying, frisky creature, always going somewhere or doing something in a red-hot hurry, and always making a song of it—a veritable babbler. His love-making is passionate and impulsive, joyous almost to rowdyism.”

Under the title of “The Nestful Tree” we read :—

“Here in the Moreton Bay ash, taken advantage of by the Shining Calornis (*C. metallica*), a white-headed, rufous-backed Sea-Eagle (*Haliaeetus girrenera*) nests, and the graceful, fierce-looking pair comes and goes among the glittering, noisy throng without exciting any special comment. Of course, it would be impossible to detect any certain note of remonstrance, for the smaller birds are generally commenting on something or other in acidulous tones.

“Another occupant of this nestful tree is the Sulphur-crested Cockatoo (*Cacatua galerita*) whose eggs are laid deep down in a hollow. Two or three hundred of the Shining Starlings, a brood of Sea-Eagles, white-headed, snowy-breasted, and red-backed, and a couple, perhaps three, screeching White Cockatoos, represent the annual output of this single tree, in addition, of course, to its own crop of sweet-savoured flowers (on which birds, bees, beetles and butterflies, and flying-foxes feast) and seeds in thousands in cunning cups.”

More about the Red-backed Sea-Eagle :—

“Two days of rough weather, and the blue bay had become discoloured with mud churned up by the sea, and the Eagle found fishing poor and unremunerative sport. Even his keen eyesight could not distinguish in the murky water the coming and going of the fish. Just below the house is a small area of partly cleared flat, and there we saw the brave fellow roaming and scooping about with more than usual interest in the affairs of dry land. At this time of year green snakes are fairly plentiful. Harmless and handsome, they prey upon small birds and frogs, and the Eagle had abandoned his patrol of the sad-hued water to take toll of the snakes. After a graceful swoop down to the tips of a low-growing bush, he alighted on the dead branch of a bloodwood (eucalypt), 150 yards or so away, and, with the help of a telescope, his occupation was revealed—he was greedily tearing to pieces a wriggling snake, gulping it in three-quarter-yard lengths. Here was the reason for the trustfulness and respect of the little birds. The Eagle was destroying the chief bugbear of their existence—the sneaking greeny-yellow murderer of their kind and eater of their eggs, whose colour and form so harmonizes with leaves and thin branches that he constantly evades the sharpest-eyed of them all, and squeezes out their lives and swallows them whole. But the big red detective could see the vile thing 50 and even 100 yards away, and once seen—well, one enemy the less. Briskly stropping his beak on the branch of the tree on which he rested, and setting his breast plumage in order, much as one might shake a crumb from his waistcoat, the Eagle adjusted his search-lights and sat motionless. In five minutes a slight jerk of the neck indicated a successful observation, and he soared out, wheeled like a flash, and, half turning on his side, hustled down in the foliage of a tall wattle (*Acacia*) and back again to his perch. Another snake was crumpled up in his talons, and he devoured it in writhing, twirling pieces. The telescope gave unique advantage during this entertainment, one of the tragedies of Nature, or rather the lawful

execution of a designing and crafty criminal. Within ten minutes the performance was repeated for the third time, and then either the supply of snakes ran out or the bird was satisfied. He shrewdly glanced this way and that, craning and twisting his neck, and seeming to adjust the lenses of his eyes for near and distant observation. No movement among the leaves seemed to escape him. Two yards and a half or perhaps three yards of live snakes constituted a repast. At any rate, after twenty minutes' passive watchfulness, he sailed up over the trees and away in the direction of his home in the socialistic community of the Shining Calornis."

Many of Mr. Banfield's observations are extremely interesting. Instances—(1.) He proves that the Shining Starling (*Calornis*) is a great plant-distributor. It brings all sorts of seeds and berries from afar to its "nestful tree," and from the ground below there springs quite a nursery of strange plants. (2.) The White Nutmeg-Pigeon (*Myristicivora spilorrhoea*), too, is a plant-distributor. Besides the wild nutmeg (*Myristica insipida*), on which it chiefly lives, it carries other nuts and seeds—quandong, palm, native cabbage (*Scavola*), Burdekin plum, &c. (3.) On one of the islets, where sea-birds were used to breeding upon the ground, goats had been introduced, which interfered much with the brooding birds. To overcome the difficulty the birds (Terns) placed their nests upon bushes or dwarf trees.

Many pretty bird homes are described. For instance :—A White Nutmeg-Pigeon brooding on her nest, at the base of an orchid (*Dendrobium*), fantastically shaded with plumes of the rich old-gold blooms. Another beautiful picture—a set of pale greenish-blue eggs of the Reef-Heron (*Demigretta*), seen sheltered by the same kind of plant dressed in golden flowers.

The only technical portion of the author's bird chapter is a census of 130 birds found frequenting his island. The census might, the author concludes, be raised to about 150 species were he to shoot birds for identification, but to destroy beautiful bird-life forms no part of Mr. Banfield's "religion," all his observations having been carried on by the aid of a good telescope and pair of field-glasses. This immunity from harm has caused many birds to come about his dwelling, and even to remain on a fence-post when he opens and shuts the gate. It perhaps should be mentioned here that Dunk Island and two adjacent islands have been proclaimed a sanctuary for birds, with Mr. Banfield as honorary protector.

No nature-lover can afford to be without this bulky, well written, and fascinating book, which can be obtained for the reasonable sum of eighteen shillings only.

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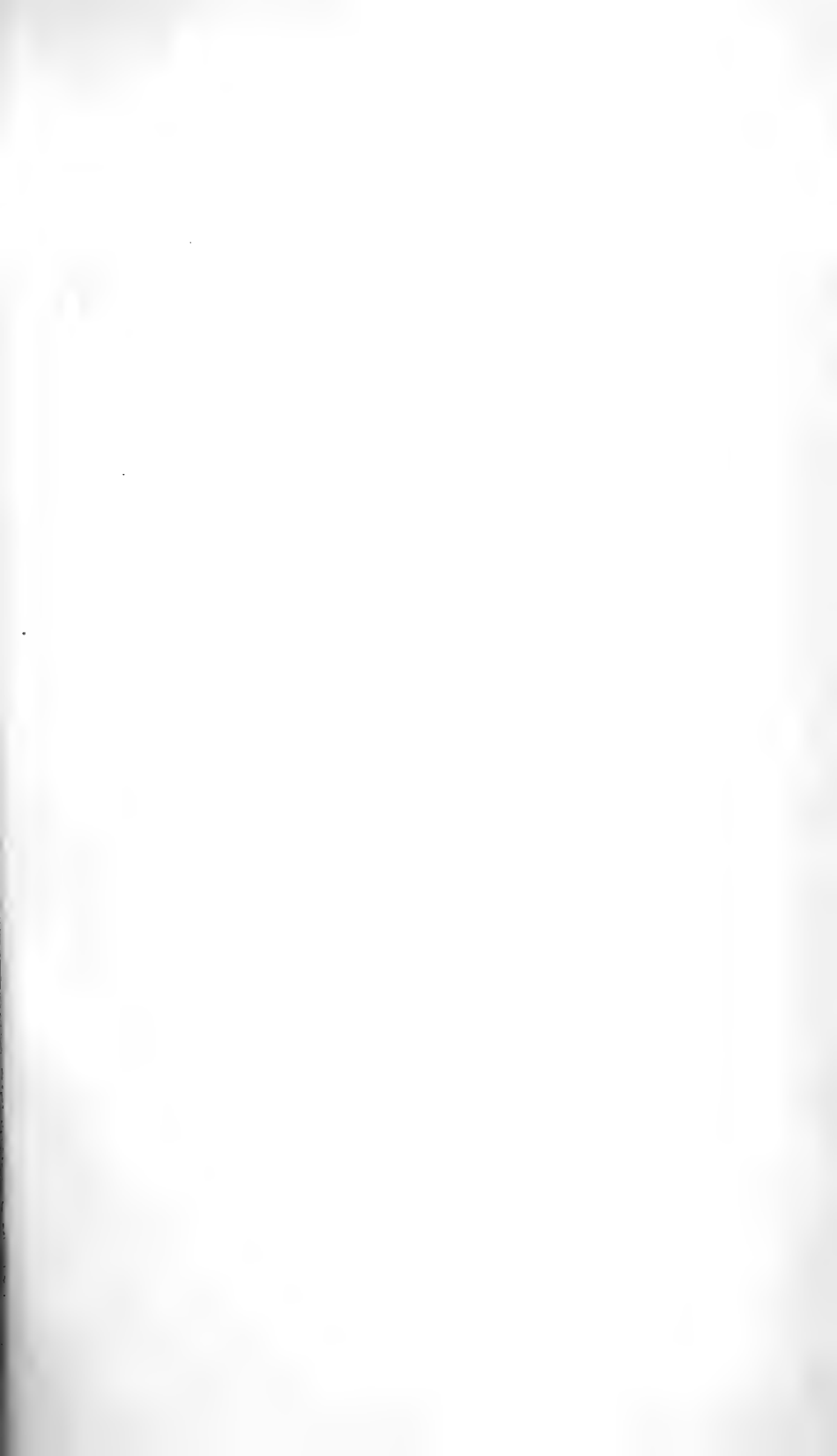
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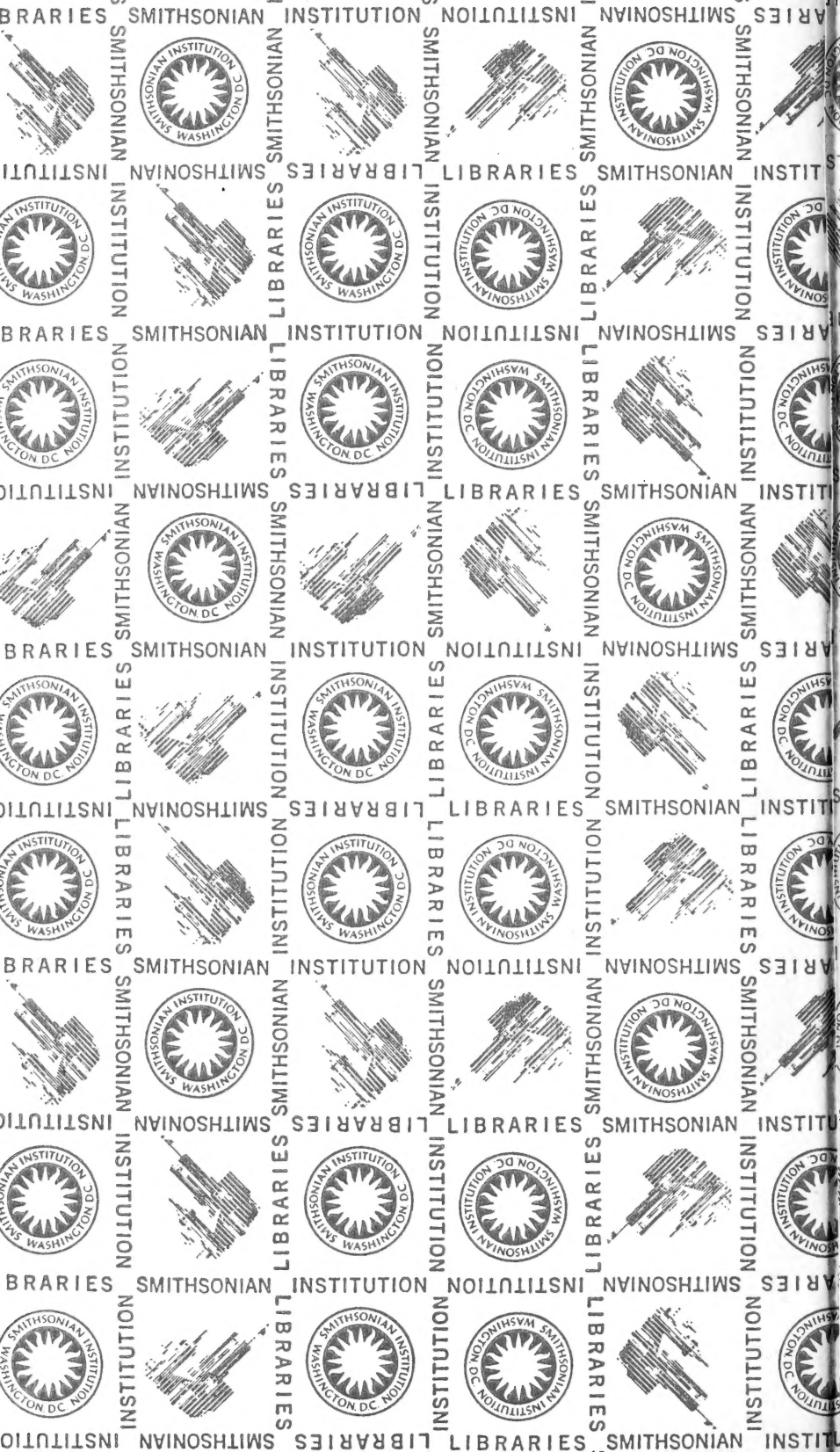


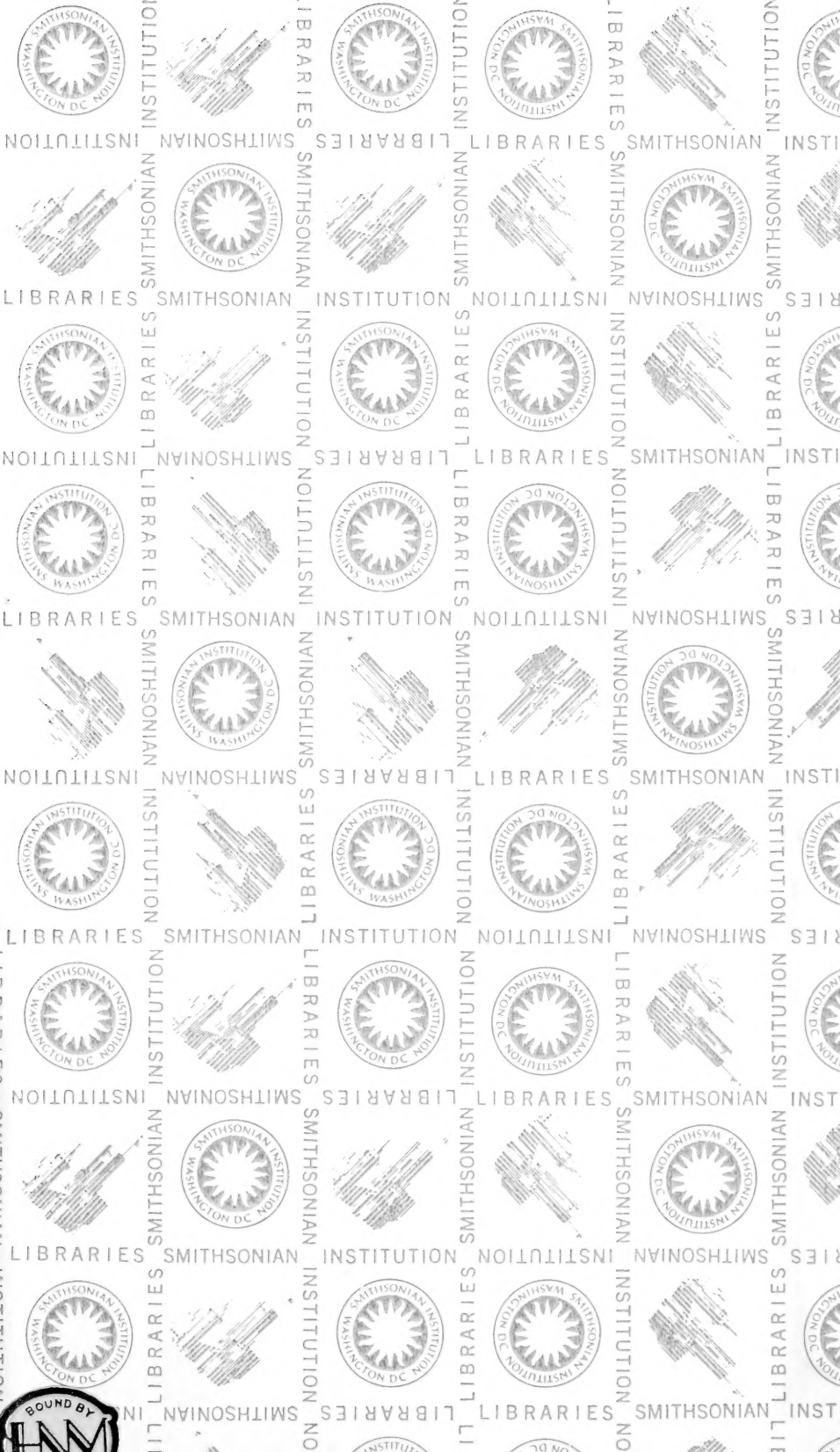
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