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# The Emu

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

OFFICIAL ORGAN OF THE AUSTRALASIAN ORNITHOLOGISTS' UNION.



Hon. Editors | A. J. CAMPBELL, Col. M.B.O.U.  
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# CONTENTS OF VOL. V.—1905-6.

- About Members, 50.  
 Aims of Ornithology, The, 92.  
 Albino Forms for National Museum, 51.  
 Attacked by Eagles, 166.  
 Australian Birds in England, 41.  
 Australian Quails Breeding in England, 173.  
 Australasian Ornithologists' Union, 54, 101, 104, 105; Annual Report, 106; President's Address, 110; Financial Statement, 112; Camp-out on Kangaroo Island, 129.  
 Australian Magpies to Ceylon, Introduction of, 231.  
 Autumn Notes, 38.  
 Autumn Ramble, An, 52.  
 Big Gun Firing and Bird Destruction, 184.  
 Bird Kindness, 42.  
*Bird-Lore*, 44, 170.  
 Bird Notes from Olinda Vale, 45.  
 Bird Observations, Some, 189.  
 Bird Observers' Club, 51, 103, 182.  
 Bird Protection, 182; in U.S.A., 166; in America, 217.  
 Bird Sanctuary, A Queensland, 204.  
 Birds and their Names and Dwelling-places, 163.  
 Birds New for Australia, 155.  
 Birds Observed and Skins Examined in 1905, 161.  
 Birds of Italy, 51.  
 Birds of the Richmond District, N.Q., Notes on the, 15, 72.  
 Birds of N.W. Australia, 167.  
 Birds Striking the Light, 52.  
 Birds Teaching Young to Sing, 41.  
 Black-headed Honey-eater, The, 12.  
 Blue Wren (Malurus), The Moults of the, 152.  
 Blue Wrens, Early Moults of, 30.  
 Bronze-wing, Notes on, 83.  
 Cairns (N.Q.) Notes, 210.  
 Clarke Island (Bass Straits) Notes, 34, 208.  
 Coachwhip-Bird, The, 192.  
 Coloured Figure Fund, 183.  
 Correspondence, 48, 223.  
 Cuckoo Notes, 20.  
 Cuckoo, Why Does the Young Eject its Foster-Brethren? 30.  
 Cuckoo, Young, Fed by Two Pairs of Honey-eaters, 209.  
 Cuckoos, 93, 170.  
 Cuckoos and Migration in Birds, Principles Governing, 145.  
 Cuckoos, Field Notes on, 35.  
*Cuculus intermedius*, 232.  
 Dichotomous Key to Birds of Australia, 104, 183. Also Supplement.  
 Domestic Wild-Cats *v.* Native Birds, 201.  
 Egg-blower, New, 88.  
 Ewing Tit, Eggs of the, 83.  
 Falcons, 204.  
 Fantail Cuckoo, *Re*, 86.  
 Far Southern Seas, 90.  
 Finch, The Yellow-rumped, 166.  
 Finches, Gouldian, 215.  
 Finches, Red-headed and Black-headed Gouldian, 215.  
 Forgotten Feathers, 163, 211.  
 Four Curious Nesting-places, 157.  
 Foxes, 230.  
 From Magazines, 41, 89, 106, 215.  
 Fruit-eating Birds, 98, 91, 218.  
 Fruit-Pigeon, New, 155, 195.  
 Gannet, The, 159.  
*Genera Avium*, 215.  
 Generic Name-changes, 173.  
 Godwit, The Barred-rumped, 167.  
 Gough Island, 168.  
 Grass-Finch, A New, 169.  
 Grass-Owls, 104.  
 Grass-Parrakeet, The Bourke, 167.  
 Great Auk, The, 89.  
 Gulls Nesting Inland, 203.  
*Gymnorhina leucanota*, Notes on, 205.  
 Hard Pressed, 41.  
 High Prices, 230.  
 Honey-eater, Nests and Eggs of Varied, 44.  
 Honey-eater, The White-plumed, as a Bee-killer, 83.  
 Hutton Memorial Research Fund, 233.  
 Ibis Rookery, Visit to a, 185.  
 Incubation, The Period of, 45.  
 Inquiry Column, 55.  
 Insectivorous Birds, 7.  
 Island Outing, An, 168.  
 Italy, Australian Birds in, 46.  
 Kagu Chick, A, 32.  
 Kangaroo Island, Birds of, 207, 224.  
 Kangaroo Island, Report on the Birds of: a Comparison with Mainland Forms, 139.  
 King Parrot, 215.  
 Kiwis, 169.  
 Kurradjong (Q.) Notes, 36, 84.  
 Laughing Jackasses, 190.  
 Limicoline Birds, Notes on Some, 23.  
 Linnean Society of New South Wales, 232.  
 Longreach (Q.) Notes, 158.  
 Lyre-Birds, Domestic, 32.  
 Mechanical Advantages of the Shape of Swans for Feeding, 206.  
*Melithreptus albigularis*, 232.  
 Migration, The Principles of, 225.  
 Mistletoes, Do Other Birds Besides the Dicaeum Distribute? 223.  
 Musk-Ducks, Frolicsome, 204.  
 Musk Lorikeet, 216.

- Members of Australasian O.U., 235.  
 National Bird Protection, 217.  
 Native Names of Birds, 48.  
 Native Bird Protection Association, 183.  
 Nature Calendar, A, 42.  
 Nesting of Australian Finches in England, 218.  
 New South Wales Bird Laws, 177.  
 New Zealand Birds, 218.  
 Ninox ? Podargus, 20.  
 Nomenclature, 27 : Priority in, 173.  
 Notes and Notices, 51, 104, 183, 230.  
 Obituary Notice (Captain Hutton), 178 :  
 Mr. Price Fletcher, 226.  
 Oological Notes and Further Description of New Fruit-Pigeon, 195.  
*Oreoscopus (Sericornis) gutturalis*, 47.  
 Ornithologists, Celebrated, 41.  
 Ornithology and Civilization, 175.  
 Over the Blacks' Spur, 215.  
 Owls' Eggs, Irregular Incubation of, 171.  
 Parakeet Hybrid, A, 215.  
 Parakeet, The Alexandra, 89.  
 Parrot, A Remarkable, 51.  
 Painted Finch in Northern Queensland, The, 82.  
 Penguins, Save the, 90.  
 Petrel, The Origin of the Name, 206.  
*Phaps chalyptera* and *Oxyphaps lophotes*, Additional Notes on the Nesting of, 159.  
 Philippine Islands, Birds of, 219.  
 Pied Mutton-Birds, 30.  
 Poowong (Q.) Notes, 31.  
 Probable New Bird for Australia, 203.  
 Psalm of Dawn, A, 190.  
*Ptilotis penicillata* and an Enemy, 190.  
*Ptilotis plumula*, 232.  
 Publications Received, 56, 184, 234.  
 Rabbit Pest in Australia, 51.  
 Regent-Bird, The, 220.  
 Regurgitative Feeding, 42.  
 Reviews—"The Three Naumanns," 49 :  
 "Col. Legge's Address," 94 :  
 "American Birds," 99 ; "Catalogue of Birds' Eggs," 223.  
 Robins, Movements of, 216.  
 Robins, Yellow, as Snake-finders, 217.  
 Rockhampton Notes, 31, 85.  
 Satin Bower-Bird's Bower, Singular Site for a, 43.  
 Sea-Gulls as Insect Destroyers, 83.  
 Scrub-Tit (*Acanthornis magna*). The, 156.  
 School in Wild Life, The, 37.  
 Siberia, 168.  
 Skua, Richardson, 89.  
 South Australian Ornithologists' Association, 26, 102, 181.  
*South African Ornithologists' Union, Journal of*, 171, 216.  
 Southern Stone-Plover, 191.  
 Sparrows at Sea, 189.  
 Species and Sub-species, 172.  
 Stray Feathers, 29, 82, 157, 203.  
 Strepera Falls, 231.  
 Sub-genera, 216.  
 Sub-species, 42.  
 Tasmanian Hawk Notes, 84.  
 Tasmanian Strays, 32.  
 Trip to the West, A, 78.  
 Tuggerah Lakes, N.S.W., A Visit to the, 1.  
 Victoria Lyre-Bird (*Menura victorie*), Notes on the, 57.  
 Visit to a Ibis Rookery, 185.  
 Warbling Grass-Parrakeets, 204.  
 Where Swallows Build, 205.  
 Wood Sandpiper, The, 155.  
 Wood-Swallows, 189.  
 Zosterops Nesting in Captivity, 215.

## ILLUSTRATIONS IN VOL. V.

Young Narrow-billed Bronze-Cuckoo Ousting Young Blue Wren	plate i
Young Fan-tailed Cuckoo in Nest of Brown Tit	plate ii
Young Bronze-Cuckoo being fed by Brown Tit	plate iii
Kagu <i>Rhinocetus jubatus</i> Chick	plate iv
Home of the Lyre-Bird : On the Far Upper Yarra	plate v
Nests of Lyre-Birds in Trees	plate vi
Lyre-Bird (female)	plate vii
Egg of Lyre-Bird (natural size)	plate viii
Young in down of Lyre-Bird	plate viii
Nest on ground of Lyre-Bird	plate ix
Lyre-Bird (male)	plate x
The late Capt. F. W. Hutton, F.R.S.	plate xi
Nest of Grey Thrush built in a Demijohn Wicker	plate xii
Young of Black-winged Crow-Shrike	plate xii
Black-winged Crow-Shrikes	plate xiii
Colony of Young Ibises	plate xiv
Coachwhip-Bird and Young	plate xv
Nest of Coachwhip-Bird	plate xvi



# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. V.]

1ST JULY, 1905.

[PART I.

## A Visit to the Tuggerah Lakes (N.S.W.)

BY J. W. MELLOR, A.O.U., ADELAIDE.

As an extension to the fourth Congress of the Australasian Ornithologists' Union, held in Sydney during November and December, a party of the visiting members made an excursion to the Tuggerah Lakes, situated about 60 miles north of Sydney. This made a pleasant and profitable sequel to the trip to the N.S.W. National Park, an account of which appeared in the last issue of *The Emu* (vol. iv., p. 157).

The party caught the early Newcastle train, which proceeds *via* Hawkesbury, where some charming water and landscape scenery is to be observed as the train wends its way along narrow, low embankments, with water on either side—ideal spots for waterfowl and waders. Our destination was reached at noon. We made our headquarters at Mr. Legge's house of accommodation—a very suitable position, with thick bush country near, and moderately timbered land with settlers' clearings here and there, and only a few miles from some of the sub-tropical virgin scrub, intermixed with palms, various fruit-bearing trees and berry-bearing bushes. The Legge family made excellent hosts, and forwarded the objects of our party in every way. Mr. Legge's three younger sons, who are thoroughly observant, and inclined towards natural history, rendered valuable assistance in locating the various birds, and so saved us much valuable time. They are also expert boatmen, and so, immediately after refreshing the "inner man," two of the party sailed with Mr. H. W. Legge in his small boat on a flying trip across the big lake, which is comparatively shallow and salt, being a large inlet, land-locked, with a very narrow and shallow entrance from the sea. Waterfowl were plentiful, especially the Black Swan (*Chenopsis atrata*), which were congregated in thousands on the weedy shallows, where an abundance of food is procurable. Several species of Cormorants were seen, including the Black (*Phalacrocorax carbo*), Pied (*P. hypoleucus*), and the Little Cormorant (*P. melanoleucus*). The Silver Gull (*Larus nova-hollandia*) graced the scene with its silvery plumage, while the Black Duck (*Anas superciliosa*) and the Grey Teal (*Nettion gibberifrons*) were fairly plentiful. Up a sluggish and brackish river that empties itself into the lake the Darter (*Plotus nova-hollandia*) was seen;

while here and there along the banks Blue Kingfishers (*Alcyon azurea*) would dart along like flashes of light in the rays of the sun, or the more stately Sacred Kingfisher (*Halcyon sanctus*) could be seen perched on a dry tree near the water. The Forest Kingfisher (*H. macleayi*) was only observed in the timbered country, where it bores its nest-holes in the large white-ant heaps high up on the trees. Breeding was being carried on by these birds. Far aloft the Wedge-tailed Eagle (*Aquila audax*) soared in circles out of harm's way, and further on a pair of White-bellied Sea-Eagles (*Haliaeetus leucogaster*) was seen. On our return to headquarters one of the party bagged a Roller or Dollar-Bird (*Eurystomus australis*), which made a fine skin for museum purposes.

Next day it was decided to make for the secluded gullies in the back country, where the dense scrub still exists, with the various soft-wooded and other trees towering 200 feet high, and where beside the cabbage palm's fan-like leaves the bungalow or spear palms raise their heads over 100 feet in the humid atmosphere—a veritable paradise for bird-life. The ornithologist could profitably spend a month there, in lieu of a couple of days. To these fascinating regions we set sail with two days' provisions, securely packed by Mrs. Legge, sen., and her daughter. With Mr. H. W. Legge again at the helm we sped on our way for a couple of hours, landing a short distance up a rivulet which took its source in the back hills. After a couple of miles of walking and climbing, we arrived at our camp, which we christened "Lyre-Bird Retreat." It consisted of two "humpies" roughly built by the Messrs. Legge on selections taken up for sleeper-cutting. We soon made ourselves at home, and after refreshing ourselves with some of the provender brought from the boat, we set about investigating the scrub, which grew at the very door—or would have done had there been a door, but our "house" was primitive, inasmuch as no doors or windows graced the structure; in fact, a fireplace was in course of erection, but it not being required, the builder had ceased its construction and visitors were allowed to enter "Lyre-Bird Retreat" by way of this chimney.

Here is the home of the Lyre-Bird (*Menura superba*), as the name of our camp indicates, and we were able to see it on our scrambles through the dense undergrowth, but, it being naturally a timid bird, and our time short, we could not extend our observations as closely as we should have wished. The Cat-Bird (*Aclurædus viridis*) was seen amongst the leafy bowers, and a specimen obtained. Along the watercourse, and in the dense shade, the bulky nests of the Yellow-throated Scrub-Wren (*Sericornis citreogularis*) were observed, looking like bunches of flood *débris* suspended from the overhanging trees. The smaller nest, of like construction, of the Large-billed Scrub-Wren (*S. magnirostris*) was found with young, and the White-browed Scrub-Wren (*S. frontalis*) also identified.

Amongst the Tits, those seen were the Little (*Acanthiza nana*), the Brown (*A. pusilla*), the Striped (*A. lineata*), and the Yellow-

rumped (*A. chrysorrhoa*). In the rocky gulches above the scrub the Rock-Warbler (*Origma rubricata*) was seen hopping from boulder to boulder in quick succession, but this species was not plentiful. In the tall turpentine trees and gigantic eucalypts, which were in flower, the comparatively strong voice of the Blood-Bird (*Myzomela sanguinolenta*) could be heard. The little birds were sucking the honey from the flowers 200 feet above, and it was only with the greatest difficulty that we could catch a glimpse of their forms. By dint of time and patience we succeeded in securing a couple of specimens. A Honey-eater that was common in various situations was the Yellow-eared species (*Ptilotis lewini*), whose note when once heard can be detected at a distance. The Bell-Miner (*Manorhina melanophrys*) was extremely local, but could be followed up by its bell-like note.

As evening drew on the notes of the feathered denizens of the scrub slowly ceased, and only dusky little Yellow-breasted Robins (*Eopsaltria australis*) stayed to catch the small moths and insects to feed a late brood of young. These birds were extremely tame and inquisitive, and would almost perch on one's head; but even these at last disappeared, and we groped our way in the dark through thick tangles of wild raspberry and other prickly bushes, among mighty trees and magnificent palms, with here and there the twinkling stars peeping through breaks in the dense foliage. After some difficulty in travelling we came in sight of the glimmer of the fire, which our friend Mr. Legge had kindled on his earlier return to camp, and it was not long ere we were safe within the slab walls of the "Retreat," doing justice to scones and billy tea, with the nocturne of the Boobook Owl (*Ninox boobook*) sounding in our ears.

We were up betimes in the morning, when a great variety of sounds caught our ears, as each bird tried to outdo the other in heralding the break of day. No waiting for breakfast, but up and out we got at once to catch a glimpse of the songsters and their doings. Birds were extremely shy, but not so the scrub leeches, which were very bloodthirsty, and kept one on the move. Several Bronze-wing Pigeons (*Phaps chalcoptera*) swept past on their way to feed, while the Little Green Pigeon (*Chalcophaps chrysochlora*) fed in the scrub above. The Raven (*Corone australis*) was, as usual, an early bird, as was the Satin Bower-Bird (*Ptilonorhynchus violaceus*), whose clear notes could be heard repeating its cry of "Water, water, water." Two or three hours soon passed, and we found it time to retrace our steps for breakfast. This meal over, a general advance was made to explore farther afield. Far up the heights the Pied Crow-Shrike (*Strepera graculina*) uttered its harsh and sharp note. On lower levels we saw the Rose-breasted Robin (*Petrarca rosea*), while the White-shafted Fantail (*Rhipidura albiscapa*) whisked about and twittered in fear lest we might touch her nest of young hard by. The Rufous Fantail (*R. rufifrons*) was seen on several occasions, but was shy. Ever and anon a Black-faced Flycatcher (*Monarcha melanopsis*) would dart through the leafy

avenues and perch for a moment and off again, while the usual alarm cry of the Rufous-breasted Thickhead (*Pachycephala rufiventris*) would resound again and again in the dense wood at the occasional report of our firearms. The curious note of the Coach-whip-Bird (*Psophodes crepitans*) rang out at intervals with startling effect, but as the afternoon was advancing, and we had to get away in good time, there was nothing for it but to leave "Lyre-Bird Retreat" and trudge away to our boat, and with a strong breeze that got up quite "a sea" on the lake we sped merrily forward, ever and anon receiving a little spray. On our way we came across a specimen of the Little Mangrove Bittern (*Butoroides stagnatilis*), which we were fortunate in adding to our small collection. We arrived in due course at our main camp, Mr. Legge's Inglewood Farm.

Saturday being our last day, we resolved to rise early and study the birds around Inglewood Farm more closely, and, by getting out before breakfast, were able to watch the birds in the crisp frosty air. Two species of Wrens—the Blue Wren (*Malurus cyaneus*) and the Variegated Wren (*M. lamberti*)—were observed in the open fern country. The Magpie-Lark (*Grallina picata*) was busy near some swampy ground, while the Black-backed Magpie (*Gymnorhina tibicen*) was frequenting the open country. Several Finches, notably the Red-browed (*Egitha temporalis*) and the Spotted-sided (*Steganopleura guttata*), were about in the bushes; the former was nesting, and a clutch of eggs was noted well advanced in incubation. The Black-faced Cuckoo-Shrike (*Graucalus melanops*) made its appearance, and on our way back to breakfast, a hen bird of the large Caterpillar-eater (*Edoliisoma tenuirostre*) was seen to fly to a tree, and upon careful watching its nest was found, high up in a forest oak, far aloft, but yet not out of the way of an agile climbing member, who soon was rewarded with an egg—a full clutch for this bird.

A morning spent near the lake's edge gave opportunity of seeing a few shore birds, and several Sharp-tailed Stints (*Heteropygia acuminata*) were secured. The Curlew (*Numenius cyanopus*) could be seen wading in the shallows, while a White-fronted Heron (*Notophya nova-hollandiae*) was perched on a neighbouring dry tree. A few Spur-winged Plovers (*Lobivanellus lobatus*) gave their warning cry, which every sportsman well knows, often to his cost. Some Silver Gulls (*Larus nova-hollandiae*) were floating on the wing just above the salt water. Over the open flats between the lake and the timbered country a Spotted Harrier (*Circus assimilis*) soared in search of prey, and the innocent little Nankeen Kestrel (*Finniculus cenchröides*) hovered in the air over a mouse or other titbit ere it descended to carry it off. Here too the Swallow (*Hirundo neoxena*) swept the surface of the pools and chased the gnats, that were plentiful. A pair of White-shouldered Caterpillar-eaters (*Lalage tricolor*) hung about a spot where the timber was thin, appearing as though they were breeding.

In the afternoon another direction was taken, to a piece of virgin scrub where the sleeper-cutter's axe had laid low many forest giants. Our trip here was almost expressly to try and get a glimpse of the

Regent-Bird (*Scirculus melinus*), and, after spending some time in vain clambering through thick undergrowth and tangle, we were just giving up to return when quite a covey was observed in a very tall tree. In a minute or two the birds had dispersed, being very shy, but after a little circumvention we were able to get nearer and observe them; we were, however, unable to get a specimen, owing to the exceedingly high trees that they persisted in occupying. As our time was limited, we were reluctantly compelled to retrace our steps, to the accompaniment of the hearty laugh, as of derision, of some Laughing Jackasses (*Dacelo gigas*).

Near our central abode, Inglewood Farm, we had a rich spot for all open timbered country birds. The Little Lorikeets (*Glossopsittacus pusillus*) were plentiful in the tops of the eucalypts, where they were extracting the honey from the flowers, while the Rosellas (*Platycercus eximius*) were in the open land among the old dry trees. In the flowering patches the Brush Wattle-Birds (*Acanthochara mellivora*) and the Red Wattle-Birds (*A. carunculata*) had abundance of food. The White-throated Tree-creeper (*Climacteris leucophaea*) was exceptionally tame, and exhibited its usual habit of hopping up the tree trunks for some distance, then flying down to the base of another tree and repeating the performance. Time and space will not permit of recording the many interesting notes taken and the observations made in the 3½ short days we were able to stay in the locality. Reluctantly we packed up our traps and specimens, &c., on Saturday night, and said *au revoir*, but not good-bye, as we hope to renew our acquaintance with our good friends, Mr. and Mrs. Legge and family, at some future date.

The total number of birds identified during the trip was 80 species. The list is as follows, the numbers being in accordance with Gould's "Handbook":—

1. Wedge-tailed Eagle (*Aquila audax*).
3. White-bellied Sea-Eagle (*Haliastur leucogaster*).
13. Kestrel (*Tinnunculus cenchroides*).
27. Spotted Harrier (*Circus assimilis*).
36. Boobook Owl (*Ninox boobook*).
52. White-rumped Swift (*Cypselus pacificus*).
53. Welcome Swallow (*Hirundo neoxena*).
59. Roller (*Eurystomus australis*).
60. Laughing Jackass (*Dacelo gigas*).
63. Sacred Kingfisher (*Halcyon sanctus*).
66. Forest Kingfisher (*Halcyon macleayi*).
69. Blue Kingfisher (*Alcyon azurea*).
73. Dusky Wood-Swallow (*Artamus sordidus*).
88. Pied Crow-Shrike (*Strepera graculina*).
92. Black-backed Magpie (*Gymnorhina tibicen*).
99. Butcher-Bird (*Cracticus destructor*).
102. Magpie-Lark (*Grallina picata*).
103. Black-faced Cuckoo-Shrike (*Graucalus melanops*).
109. Great Caterpillar-eater (*Edoliisoma tenuirostre*).
112. White-shouldered Caterpillar-eater (*Lalage tricolor*).
113. White-throated Thickhead (*Pachycephala gutturalis*).
116. Rufous-breasted Thickhead (*Pachycephala rufiventris*).
123. Grey Shrike-Thrush (*Collyriocinclla harmonica*).

129. Yellow-bellied Shrike-Tit (*Falcunculus frontatus*).  
 134. White-shafted Fantail (*Rhipidura albiscapa*).  
 136. Rufous-fronted Fantail (*Rhipidura rufifrons*).  
 144. Leaden Flycatcher (*Myiagra rubecula*).  
 149. Brown Flycatcher (*Micræca fascians*).  
 152. Black-faced Flycatcher (*Monarcha melanopsis*).  
 164. Rose-breasted Robin (*Petræca rosea*).  
 175. Yellow-breasted Robin (*Eopsaltria australis*).  
 179. Lyre-Bird (*Menura superba*).  
 182. Coachwhip-Bird (*Psophodes crepitans*).  
 185. Blue Wren (*Malurus cyaneus*).  
 191A. Variegated Wren (*Malurus lamberti*).  
 213. Yellow-throated Scrub-Wren (*Sericornis citreogularis*).  
 216. White-browed Scrub-Wren (*Sericornis frontalis*).  
 219. Large-billed Scrub-Wren (*Sericornis magnirostris*).  
 220. Brown Tit (*Acanthiza pusilla*).  
 226. Yellow-breasted Tit (*Acanthiza nana*).  
 227. Striped Tit (*Acanthiza lineata*).  
 229. Yellow-rumped Tit (*Acanthiza chrysorrhoa*).  
 231. White-fronted Bush-Chat (*Ephthianura albifrons*).  
 236. Rock-Warbler (*Origma rubricata*).  
 240. Ground-Lark (*Anthus australis*).  
 253. Red-browed Finch (*Egintha temporalis*).  
 257. Spotted-sided Finch (*Staganopleura guttata*).  
 276. Satin Bower-Bird (*Ptilonorhynchus violaceus*).  
 277. Cat-Bird (*Aelurædus viridis*).  
 282. Regent-Bird (*Sericulus melinus*).  
 290. Raven (*Corone australis*).  
 306. Yellow-eared Honey-eater (*Ptilotis lewini*).  
 331. Red Wattle-Bird (*Acanthochæra carunculata*).  
 332. Brush Wattle-Bird (*Acanthochæra mellivora*).  
 339. Spinebill (*Acanthorhynchus tenuirostris*).  
 341. Blood-Bird (*Myzomela sanguinolenta*).  
 357. Bell-Miner (*Manorhina melanophrys*).  
 360. Silver-eye (*Zosterops capulescens*).  
 371. White-throated Tree-creeper (*Climacteris leucophaea*).  
 422. Rosella (*Platycercus eximius*).  
 450. Little Lorikeet (*Glossopsittacus pusillus*).  
 459. Little Green Pigeon (*Chalcophaps chrysochloræ*).  
 462. Bronze-winged Pigeon (*Phaps chalcoptera*).  
 472. Peaceful Dove (*Geophaps tranquilla*).  
 480. Painted Quail (*Turnix varia*).  
 500. Spur-winged Plover (*Lobivanellus lobatus*).  
 522. Sharp-tailed Stint (*Heteropygia acuminata*).  
 535. Curlew (*Nymenius cyanopus*).  
 548. White-fronted Heron (*Notophoxyx nova-hollandiæ*).  
 550. Plumed Egret (*Mesophoxyx plumiferæ*).  
 560. Little Mangrove-Bittern (*Butoroides stagnatilis*).  
 570. Land Rail (*Hypotaenidia philippinensis*).  
 577. Black Swan (*Chenopsis atrata*).  
 585. Black Duck (*Anas superciliosa*).  
 586A. Grey Teal (*Nettion gibberifrons*).  
 597. Silver Gull (*Larus nova-hollandiæ*).  
 652. Black Cormorant (*Phalacrocorax carbo*).  
 653. Pied Cormorant (*Phalacrocorax hypoleucus*).  
 655. Little Cormorant (*Phalacrocorax melanoleucus*).  
 657. Darter (*Plotus nova-hollandiæ*).

## Insectivorous Birds.

(*Extracts from a non-competitive paper written by A. G. CAMPBELL, Melbourne, for the Nature Study Exhibition, Geelong, Easter, 1905*).

### THE ECONOMY OF BIRDS.

ALL nature is interdependent, and remarkably well able to balance itself. When a form is past usefulness it disappears, and leaves the field to the active, the quick-witted, the keen in life's pursuit, who endeavour to forward the best interests of the species.

Birds are one of the most striking groups in creation, and their very existence proves their utility. Brought into the world not for sport merely, or for beauty, the practicality of their use is beyond all question.

One form of life lives upon a lower type, this upon some other, and so a check is kept. All increase and decrease with the food supply, while those most preyed upon are usually most prolific. The fight with circumstances always makes a race strong and improves it, because in the struggle for existence the weak, those insufficiently equipped, and the old are the first to perish. By this process of the "survival of the fittest" the race improves.

Birds have a definite purpose for existence in that they keep down plants, insects, molluscs, reptiles, and small animals, and keep down each other. We in Australia have not far to look for examples of introduced life increasing beyond bounds. Evidences are too abundant. In the rabbit and Cape weed it has been proved how forms might become a burden when brought away from natural restriction.

Conversely, as much forethought should be shown in encouraging insect-eating birds about the fields and forests as there is required before introducing new life. If birds are driven away entirely, as the country is cleared, it is little wonder that native insects increase. Remove the natural restriction from anything and the lower form becomes predominant. It may even enlarge its tastes and feed upon plants, native, or possibly introduced, which were before untouched, thus increasing in destructiveness as well as in numbers.

Birds, according to their food supply, may be classed thus:—

- A. Seed and fruit eating.
- B. Insectivorous.
- C. Omnivorous.
- D. Carnivorous.

To the country generally the most important sections are the second and third—viz., B. and C. To a certain extent seed and fruit eating birds are of no small importance in spreading grass seed and the seed of forest trees, yet the insectivorous section of our avifauna has a more direct bearing upon the country's welfare, inasmuch as they keep a check upon hordes of ravenous insects with no small propensity for destroying the produce of the land.

Omnivorous birds include many that are considered pests to orchardists, farmers, and others, because at times they attack

fruit and grain crops. During other seasons, however, they make ample compensation by keeping down small reptiles, injurious insects, and weeds.

The carnivorous section, including all the much-abused Hawks, are undoubtedly of great importance, for they check not only small grass-eating birds (Quail and Finches) but small animals and reptiles, as well as some of the larger insects. If they do take occasional chickens from the poultry-yard, may they not be well forgiven?

Turn for awhile to the other aspect of bird-life, and examine the forms that the insectivorous birds are designed to hold in check. Here there is found a complicated matter. The insect inhabitants of the land, especially the portions most opened, are not in the main the original species. Add to this the alarming fact that surviving native species have frequently been driven to seek food on introduced plants because of the clearing away of their own natural forests, and we have a state of affairs that calls for careful thought and treatment.

The insects the producer has now to face can be grouped under four heads—

A. Insects brought on introduced plants (indigenous to the plants in their respective native countries)—instance, the codlin moth. When a form is brought to a new area, free from its parasites, it increases alarmingly, unless some other parasite rises up to carry on the work of keeping it in check.

B. Insects native to a plant, but which enlarge their tastes when taken abroad. Many scale-insects might be cited under this head. Though the food of many of these is restricted to a particular genera, or even species, of plant, there are others which spread from one class of food to another.

C. Insects native or aboriginal to a country attacking introduced plants. When the land was cleared and planted with fruit trees native root-borers were tempted, when food supply gave out, to try the nearest living tree. In a short time they altered their habits to suit their new surroundings. Many Australian insects have so taken up with introduced plants that they now seem part and parcel of them. Besides root-borers, the native wattles and gum trees have given trunk-borers to the peach, cherry, plum, and elm trees, as well as the cottony cushion scale and the black scale to citrus trees, while the little sweet-rooted creeper (*Glycine*) has given a most destructive caterpillar to the European vine and the American Virginia creeper. In the case of the cushion scale, this was only a preliminary to its spread among the citrus groves of California and Florida, where it was only after many years that the happy thought of introducing some of its parasite ladybird beetles from Australia put a stop to its devastations.

Lastly, D. Native omnivorous insects. The original vegetation having been cleared from the land, native omnivorous insects like the grasshopper, locust, caterpillar, and chafer naturally turned for their food supply to introduced plants, and it is to this class



of insect that the more open farming areas of the western and northern districts, as well as Riverina, owe much trouble. The natural agency of the insectivorous birds is still at our disposal in dealing with these pests.

Native insectivorous birds are fortunately adaptable to new food; they feed upon the introduced insects as readily as upon the native. Introduced birds, which spread so rapidly, are equally at home, so Nature's forces have to a certain extent been balancing themselves.

But all insectivorous birds are not alike. They have not, and could not have, completely interchangeable tastes; hence it becomes necessary to know their natural divisions, according to the type of food they devour, so that, in encouraging one form, we may be sure we are matching it against the particular class of insect we wish to combat.

The majority of birds will be found to have special aptitude for certain types of insects, not only in particular places but at definite times. There are birds for the gully, birds for the open, birds for small insects and birds for large ones, as well as birds for light and birds for heavy work. Just as there are insects in every position—in the mountains, in the forests, on the open plain, on the swamp, on the sea shore, some living below ground or under stones, some in the water, or the mud, or the sand, some under bark or in trees, some among the leaves and twigs, and others flying in the air—so there are birds to follow them all to their hiding places and their sporting grounds.

In this connection one must consider—

I. Birds that take their insect prey exclusively on the wing. These are perhaps the most dainty section. In the deep gullies of the mountains and in forest tracts some kinds of Robins and all the Flycatchers are found; in the more open country the common Swallows, Tree-Swallows, and Fairy Martins occur. All are small, lithe, and active, furnished with large mouths and strong wings for the special work to which they are called. They deal with the myriad forms of winged insects of the smallest type that sport themselves, previous to laying the eggs for the coming generation, in places of their several fancies. This furnishes the main reason why the Swallow family is so common and in such numbers. To these birds entirely is left the charge of the nondescript hordes of small insects found in common places. In the mountain fastnesses, where the Swallows do not go, but where small insects still exist, this duty falls to the Flycatchers and two or three species of Robins. Here we must include, too, all the Wood-Swallows, birds of gregarious habit, feeding extensively on the wing, but also taking insects from the ground. They are often seen greedily pursuing the armies of small grasshoppers, which, when they reach the winged locust stage, would move further afield and devastate the country.

II. Another important division contains the majority of insectivorous birds, or all those that prey upon insects in all other places.

It must not be thought, however, that this division is quite as exclusive as the first. A great many species, especially of the Honey-eater tribe, take insects on the wing as well as many winged forms found resting about trees.

It is interesting to follow the further sections of this grand division:—

1. Birds feeding upon the ground are both large and small, and may be arranged in groups according to their natural surroundings. Principal among them are Ground-Thrushes and Scrub-Wrens for thick mountainous country; Ravens, Magpies, Scrub-Wrens, Blue Wrens, Tomtits, Field-Wrens in the average southern forests; but replaced by Ground-Birds, Chough, Struthidea, Babblers, and Whiteface in the more exposed northern areas. Field-Larks, Ground-Larks, Skylarks are found in the open field, Jackasses and Magpie-Larks near water; Plover and Ibis inhabit the plains, and Herons, Snipe, and other wading birds make the swamp and littoral their dwelling-place.

All these take their main food supply from the ground, turning over, may be, leaves, sticks, stones, and prying into every nook in search of provender. The smaller birds are content mainly with eggs and young of insects or very small insects, while some of the larger prospect to some distance in the ground for hidden dainties. Special reference must be made to the heavier scratching birds, like the Lyre-Bird and Mallee-Fowl, which in their respective habitats turn the ground up considerably in their search for the larger root-eating larvæ.

For birds feeding in or near water almost a special section is needed. Those of most direct interest are those whose food consists, besides insects, of molluscs, certain of which are known to be hosts of fluke and other animal diseases. The Magpie-Lark, the Jackass and Sacred Kingfisher, the Spur-winged Plover, and many waders always feed in moist places.

2. Birds feeding on trees as well as on the ground include many extremely useful ones, among which are Black Magpies, Cockatoos, Parrakeets, Babblers, the Grey Thrush, many Honey-eaters, and Cuckoos.

Cockatoos and Parrakeets, though normally built for fruit-cracking and seed-eating, are now known to devour on the ground great quantities of insect eggs. Some species of Cockatoo have been found rooting out the bunches of locust eggs, which are deposited in "warrens" in hard ground. Some of the Parrakeets, especially the ubiquitous Rosella, have a sweet tongue for the rotund scale-insects on the gum trees and wattles.

3. Birds that feed in the tree-tops or among foliage have yet a different function of keeping the leaves (the lungs of the plants) free from eggs and larvæ of leaf-eating insects. These birds are mostly small, and comprise Tits, Diamond-Birds, White-eye, and many of the smaller Honey-eaters, especially those of the genus *Melithæptus*, Orioles, Friar-Birds, and Wattle-Birds.

Not only the number of species and individuals, but the relative

sizes of the birds, it must be remembered, point to the preponderance of large over small insects, or small over large. This aspect is most noticeable in this section. The Crikes are perhaps the only birds exceeding 9 inches in length, with a few Wattle-Birds in the forests and Friar-Birds along river frontages, that feed in the tree-tops, and, as they are not by any means as plentiful as the small fry, it is evident that there are not many large insects in those positions to be followed up.

As illustrating another point, it should be noticed that such large birds as the Jackass, the Boobook, and small Hawks have been seen feeding upon the great bunches of chafer beetles which are often, in summer, suspended from the tree-tops. But section 3 proper is intended to represent mainly those small birds which, with inquisitive persistence, pry among the wind-tossed tree-tops.

4. Birds specially useful to forest trees bring into notice a subject almost untouched in this young country—forestry. All must have been struck with the alarming number of native timber-destroyers that exist. Whole genera of beetles and moths quite common in Australia are timber-borers, and without the natural help of certain of the bird inhabitants a forest would soon be sadly decimated. The Black Cockatoos rank as the most powerful operators by removing the offending insects in the branches. These Cockatoos also feed largely upon hard native fruits.

But more serviceable would be those birds that picked off the borers' eggs or the young insects before they have entered deeply into the wood, and so deal with timber-destroyers at an early stage. The birds specially fitted for this work are the Tree-creepers (allied to the Woodpeckers of the old world) and the Tree-runners. The former ascend the tree with a sidelong movement, prying into the bark and crevices, bringing forth insects with their long curved bills, and even creeping into larger holes and hollows in search of food. On flying to another tree they invariably begin near the bottom and ascend again the trunk and branches. To the Tree-runners, a smaller genus of birds, is left mostly the care of the upper part of the tree, into which the Tree-creepers do not often go, and on the smaller branches they search up and down for offenders.

The Black and Grey Magpies may be placed next in importance, for with their powerful bills they strip away the outer layers of bark, reaching parts that the smaller birds cannot deal with. Then there are several other birds—the Podargus (erroneously called the Mopoke) and the Nightjars—which attack the insects at quite a different time—during the perfect or winged stage—and as most of the moths and beetle-borers are nocturnal these birds are also nocturnal. In their important work of keeping down the flying and egg-laying insects in the forest they are doubtless assisted by the small species of Owls, as well as bats.

Lastly must be mentioned the Lorikeets. Though feeding

extensively on the nectar of gum flowers, and incidentally upon the insects they find there also, they do excellent work in thinning out the hordes of scale-insects, so common on the foliage and small twigs, being attracted by the sweet manna or honeydew secretion of the insect.

Birds, in truth, are factors in keeping the earth habitable and the soil productive enough for man and beast. To destroy them or drive them away from cultivated fields because a toll is taken of grain or fruit is a most short-sighted and self-destructing policy. Is it not man's duty to use his powers to readjust matters and give the birds again the important place on the land that their unique function demands? By an all-wise Creator birds have been fore-ordained to assist human intelligence towards its own highest ideals. Why spurn the gift?

The protection of breeding grounds and the absolute protection of the insectivorous birds themselves are not the only necessary steps to a better condition. First of all, educate the people into a knowledge of the true meaning of things, place a proper spirit of reverence in the young, and all these matters then will take care of themselves.

To a very great extent introduced birds will play an important part in checking insects. Many native birds of smaller size have so long been driven away that it is almost an impossibility to bring them back to the fields and meadows. Even such a strong species as the Magpie has been decimated, and is not by any means in effective numbers.

Native trees, when left for shade or ornament near the city, soon die. Some say the smoky or poisonous atmosphere is the cause, but the real reason will be found more complex. Native birds like Tree-creepers, Sittellas, Cockatoos, and Parrakeets, with a hundred and one other forest mates, have long since ceased to patrol the trees and keep in check borers, scales, and many other timber-destroying insects. It is little wonder, then, that the vegetation succumbs to the repeated attacks of insects, which are soon in numbers sufficient to sap its very life blood and leave the gaunt frames, stripped of all beauty, a standing object-lesson of the power of an unguarded evil.

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## The Black-headed Honey-eater (*Melithreptus melanocephalus*).

BY A. E. BRENT.

(*Read before the Tasmanian Field Naturalists' Club.*)

THIS species is one of the smallest of the Honey-eaters, and is unknown on the Australian mainland, though very common in Tasmania, more especially in the mountain ranges of the south. It is partly insectivorous, and in winter is to be seen feeding on small insects (caterpillars, &c.), which it obtains from under the dry bark and leaves on the branches of trees. It may sometimes be seen working

its way along on the underneath side of a branch, back down, and pecking away the dry bark most vigorously in search of insects, but when the spring and summer return, and the eucalyptus trees begin to bloom, you will find it enjoying the nectar from the blossoms once more. In spring the birds flock together in mobs in the honey trees, but during the summer they live in pairs.

It is not so bulky as a Sparrow, though rather longer, and measures  $5\frac{1}{2}$  inches from tip of bill to end of tail, and about 9 inches across the expanded wings. It is whitish on the lower surface, black on the head and part of the neck, greenish-yellow on the back, and with the wings and tail of a slaty grey; the eyes are pinkish. The legs are pale brown in the young birds, but become darker with age.

Colours are not distinguishable between the sexes, except that the male is a little brighter. But in flying the female always goes first, the male following her in all her movements, and when she settles on a branch he settles close up to her.

The nest is usually placed on a horizontal branch, so hidden in a hanging bunch of leaves as to be almost invisible, but is occasionally built in upright branches. Peppermint and white gum are the trees usually selected; more rarely the stringybark. The tree chosen is nearly always near a creek or waterhole, and the birds go repeatedly to the water during the day and evening. The position of the nest varies much, being sometimes low, and occasionally very high. It is what is called a hanging one, and the birds start at the top with a few fibres of wool, which are securely fastened to the stems of the small leaves and branches, weaving them together till the rim, or upper part of the nest, is made. From then onwards most of the material goes inside, except for the finishing touches on the outside. For this they use fine pieces of green moss woven in with the wool. This gives it a greenish appearance, which blends with its surroundings, and makes it very hard to detect by the naked eye (some collectors use binoculars in searching for nests). Sometimes fur is used in small quantities for lining, but the majority of the lining used is wool, where this can be obtained, but when it cannot be got thistle-down is often used, and the nests are strengthened with cobwebs and fibre.

As to the habits of this species, during most of the year the birds make a sharp, whistling noise, but in the nesting period the call is quite different, and anyone accustomed to the birds can tell at once by the call whether they have a nest or not.

The birds, both male and female, after pairing, are most industrious, and in a few days start to build the nest, and within a week they will not only have built this, but will have stocked it with eggs. If robbed, they will make another nest, and the fresh eggs will be laid within a week if the old nest is torn about, and this they will do at least three times. The eggs with each fresh clutch become paler and with less numerous spots.

The birds build in November, and the eggs laid are three in number. They are of a bright flesh colour, with a few small

scattered spots of a darker colour, of which a few are condensed into a ring near the crown. From the time they are laid till they are hatched is about 16 days, and certainly less than three weeks. The young birds of the first brood can be seen flying during Christmas week. In ordinary seasons there are at least three broods in a year.

A pair noted this season building, both set to work with a will, the male bird calling out and flying from one nest to the other in a highly-excited state, but at intervals would fly away with the female, and return with material, flying direct to his selected spot, and making a great fuss the while; but the female kept building on, and treated him with contempt. I stayed for quite two hours, and by that time both nests were quite visible from the ground. On passing that way next day I saw, to my surprise, that the nest of the male was completely gone. He had evidently failed to convince his better half that his choice was the better one, so, like a dutiful husband, had given in, and added the material of his nest to hers. His nest, however, would have been the better, as it was quite inaccessible, whilst hers was low down and easy to get at.

After the eggs are laid the female seldom leaves the nest, in windy weather never: if she did the eggs might be thrown out, as the nests are then nearly upside down. So, if it be necessary to chop the tree down to get at the nest, a windy day should be selected, as the bird, even when the tree is falling, will stick to her eggs, provided the tree falls clear of others. The male is most attentive to his mate in bringing food, which, at the nesting season of the year, consists mostly of honey and manna.\* The young are also fed on the same food by both birds. The male, when his mate is sitting, is never more than a few minutes away from her, and by constantly watching him at this time the nest is easily found. In fine weather, when the female wants to leave the nest, she gives a peculiar call, and the male at once takes her place.

This species of Honey-eater is much favoured by the Pallid Cuckoo for foster-parents for its young. When placing its egg in one of their nests it very rarely fails to throw out one of the other eggs, or to do away with it in some way or other (how is not yet known), and its own egg takes its place in the nest.

On several occasions this Cuckoo has been so anxious to deposit its eggs in Black-headed Honey-eaters' nests that it did not wait till the structure was completed. Hence the egg was built in with the material, and could never have been hatched.

The young Cuckoo has the best of it. He grows much faster, and takes most of the food, for he will eat twice as much as the rest of the family put together, so he keeps his foster-parents employed all the time. As soon as able, he works his shoulder under the other occupants of the nest, and throws them out, † after which he lives in comfort, and grows rapidly, and the nest,

\* Manna is a form of sugary substance secreted by an homopterous insect, probably a species of scale, which lives upon the leaves of *Eucalyptus criminalis*.—EDS.

† Does Mr. Brent state this of his own knowledge, or is it an hypothesis?—EDS.

being of elastic materials, increases in size with his own growth. No one without seeing it could ever imagine a Pallid Cuckoo living in the nest of this Honey-eater, and were it not for the elasticity of the material used in its construction it would be an impossibility.

This Honey-eater is among the protected birds in Tasmania.

## Field Notes on Birds of the Richmond District, North Queensland.

BY FREDC. L. BERNEY.

### PART I.

ROUGHLY speaking, this district, which lies within a radius of 70 miles of the township of Richmond, is situated 250 miles south of the Gulf of Carpentaria and a like distance from the east coast. Through the middle of it passes the Flinders River, which, like all the western waterways, only runs during the wet season.

Its southern half consists of open, practically treeless, downs, well watered by bore streams (artesian), along which beds of bulrushes (*Typha angustifolia*)\* have formed, making excellent shelter for many semi-aquatic birds. The northern portion may be again divided into hall downs and open timbered country, and half rough, low basalt ranges, more or less covered with gidea (acacia) and boree scrub. Along the river grow tall white-barked gums, while coolibahs (both eucalypts) take their place on the creeks.

SPOTTED HARRIER (*Circus assimilis*).—Not uncommon. On the wing their movements are slow and measured, as they beat round the edge of a swamp or along the edge of a bulrush-covered bore stream. Again, stretching their wings high above their back, often at nearly a right angle to one another, the extremity of the primaries turned upwards, they sail for a couple of hundred yards on rigid pinions, and using the line of the vertebral column as an axis they roll from side to side like a ship at sea. They seldom rise to any height—just sufficient to clear natural obstacles—and when flying they carry their legs extended straight out under the tail, shifting them, still extended, to a right angle with the body to regulate the balance upon any sudden turn becoming necessary, on the sighting of a desired lizard or grasshopper. They are handsome-plumaged birds, spotted above, while the under surface of the wings looks like mother-of-pearl. Though the bulrush beds are their favourite haunt, they also hunt the open downs.

HARRIER (*Circus gouldi*).—Much less frequently seen than its spotted relative, and always about bulrush beds.

\* The seed of *Typha angustifolia* is one of the smallest known, and being provided with a pappus or tuft of hairs can be carried far and wide upon the wind, but only where it meets the requisite conditions of permanent swampy water is it likely to germinate and grow. It is truly remarkable how the plant appears. Some of the great desert tracts of Central Australia have been destitute of vegetation for untold time, yet if an artesian bore is struck, with its attendant stream, so surely do the "bulrushes" immediately spring up along its course.—Eds.

GOSHAWK (*Astur approximans*).—The Goshawk is not uncommon; it is a short-winged and round-winged bird, the latter being caused by the first two primaries, of which the first is much the shorter, being considerably less in length than the next three, which are much of one length. I never see it soaring or manoeuvring in the open sky; it trusts rather, when on the hunt, to rapid movements in open timber, darting here and there between the trees and sweeping round bushes on the chance of taking its prey unawares. If once its intended victim gets properly going I doubt if it ever pursues. Between times it sits motionless in the foliage of a tree, watching and listening like a game-keeper at the corner of a copse. The measurements of two that came into my hands (both females) are:—

	Length.	Wing to carpal joint.	Wing to anconal joint.
(1)	19 $\frac{1}{2}$ in.	11 $\frac{1}{2}$ in.	14 $\frac{1}{2}$ in.
(2)	19 $\frac{3}{16}$ in.	11 $\frac{3}{4}$ in.	14 $\frac{3}{4}$ in.

One bird was shot in September (while it was devouring a domestic hen much heavier than itself) and the other in May. The eggs in the ovaries of the former were the size of No. 8 shot, and in the other the size of pins' heads.

WEDGE-TAILED EAGLE (*Uroactes audax*).—Plentiful enough here; whether on the open downs or the timbered basalt country, but their numbers vary one time with another, without showing any regularity in their coming and going. As an instance of what a sheepman would call a bad time, I may mention the experience of Hughenden Station, previously recorded (*Emu*, vol. iii., p. 187), where 1,060 were poisoned in eight months. On the other hand, there are times when it would be hard to find a representative of this grand bird.

On the open country, where timber worthy of being called trees is absent, they often place their nests in low bushes. I have many times been able to ride up alongside the nest and ascertain the contents without dismounting. Eagles commence laying at the end of May, and the dates of my two latest clutches of eggs are 3rd and 14th August. The eggs vary greatly, the two forming a clutch often being of different types as regards colour and markings. I found a fine pair of eggs, quite white, in July, 1904, and took them out of the nest without getting off my horse; they were an exceedingly large pair, measuring—(1) 3.19 x 2.59, (2) 3.06 x 2.5 inches.

It seems curious that, so far as my experience goes, only one of the pair of young birds in a nest reaches maturity. I have seen many pairs in the down, but I have no record of ever having seen more than one feathered youngster at the nest. On mentioning the matter to two of my neighbours, they stated their experience was similar.

As regards Eagles taking their time at nest-building, I can confirm Mr. Chas. Barnard's experience.\* After apparently finishing a nest, they sometimes leave it for two or three weeks, and then, returning, add more green leaves to the lining and lay straight away.

I have been keeping the measurement of the spread of the wings of these birds, and the average of ten individuals is 6 ft. 5 in., ranging from 6 feet to 7 feet; this was rather disappointing to me, as I had expected bigger results, and I still think I have seen birds that would go some inches over 7 feet.

WHITE-BELLIED SEA-EAGLE (*Haliaeetus leucogaster*).—My only experience of these noble birds was during the summer of 1902-3. One

\* "Nests and Eggs" (Campbell), p. 14.



showed up 21st November, and my next record is the middle of December, when a pair took up their quarters near my camp and remained with us through the summer. I saw the last of them on 2nd April. They must have been considerably out of their latitude out here; their presence, I expect, was due to the very severe drought from which we were suffering at the time. Waterholes in the Flinders that had the reputation of being permanent were going dry, with the result that large numbers of fish were dying—fish of 20 and 30 lbs. weight—and, drifting to the shore, became stranded there, and I think food for the Sea-Eagles, though of this latter I am not certain, as I never saw the birds at the fish. Their cry resembles the nasal quack of a Wood-Duck (*Chenonetta jubata*). I never saw them away from the waterholes.

**WHISTLING EAGLE** (*Haliastur sphenurus*).—These are always here—a common bird with us. They eat either offal or live prey, generally the former, for, not being very quick on the wing, they are unable to obtain the latter unless circumstances are very favourable. If not smart, they are at least dexterous on the wing. On one occasion I had an opportunity of seeing one of them swoop at a family of young domestic Ducks (a few days old), and take two of them, one in each talon. I could hardly credit my own eyes, but an hour later, hearing a disturbance among the poultry, I was out just in time to see the Eagle carry off two more, in spite of the Ducks' foster-mother—a valiant old hen. Unfortunately I had no gun handy at the time.

They fall very ready victims to baits put out for Eagles (Wedge-tailed) and dingoes, which is a pity, as they do a lot of good clearing up offal and killing grasshoppers. My earliest record regarding their nesting is 13th May (1904), when I found a nest with one chick in a mixed covering of down and feather, the former preponderating; my latest date is 28th August (1903), when I found two nests, each with two eggs.

The conspicuously spotted plumage of the immature bird is much more handsome than that of the adult.

I should say Whistling Eagles pair for life.

A female in spotted plumage, but apparently full grown, gave the following measurements:—Length  $22\frac{1}{2}$ , wing  $16\frac{3}{8}$ , tail  $10\frac{1}{2}$ , tarsus  $2\frac{1}{8}$ , culmen  $1\frac{3}{16}$ , cere  $\frac{3}{8}$  inches; spread of wings, 4 ft. 5 in. Eggs in ovaries very small. Bird poisoned, August, 1904.

**KITE** (*Milvus affinis*).—Next to the Crow, this is the most common bird in the district. I seem to have but few notes concerning them, on account, I expect, of their very commonness. My diary records eggs and youngsters during February and March.

*Milvus affinis* is the most useful scavenger we have about a homestead or camp, cleaning up and carrying away all offal (and it is in the carrying away that it beats the Crow) or scraps, which would otherwise attract flies, and cause sickness. At favourable feeding grounds, such as slaughteryards, they assemble in great numbers. They are useful, too, as grasshopper destroyers.

**BLACK-BREADED BUZZARD** (*Gypoictinia melanosterna*).—The Buzzard is only seen occasionally, generally singly, but at times in pairs, and then almost invariably flying high in large circles. With one exception I have never seen them at rest. When seen on the wing a good guide to their identification is the conspicuous pure white patch in the centre of the outstretched wing, which is formed by the bases of the first six primaries.

They are not credited, as a rule, with being carrion-eaters, but I poisoned one at a dead kid that I had put as a bait for Eagles. It is the only specimen that I have been able to handle, and from it took the following measurements:—Total length  $22\frac{3}{8}$ , wing 18, tail  $8\frac{1}{2}$ , tarsus 3, culmen  $1\frac{1}{2}$  inches; spread of middle and hind toe,  $4\frac{7}{8}$  inches; spread of wings, 5 ft.  $1\frac{1}{2}$  in. The general plumage was black-brown and dull chestnut-red, put on in a very patchy and mottled manner. Shortly after this I was attracted to a knot of birds that I took to be Eagles at a dead lamb, but which on nearer approach I was surprised to find were Black-breasted Buzzards, no less than six of them, feeding on a nest of half a dozen Emu-eggs, all broken and all fresh. In the nest—a cushion of dry grass—was a round stone, the size of a domestic hen's egg, that I am sure was never put there or left there by the Emu. Now by what means was the news of the discovery of that Emu's nest spread to gather up half a dozen of what is with us certainly a rare bird? I would not have thought there were that number of the Buzzards within a hundred miles of the place. I remember one being shot at Homestead, on the Campaspe River (N.Q.), where it had swooped at a flock of Whistlers (*Dendrocygna eytoni*) that were preening themselves on the bank of a lagoon, and carried one off to a neighbouring coolibah, from which it was shot, Buzzard and Duck coming to ground together. The gunner was congratulating himself on obtaining two birds with one stone, or, rather, shot, when the Duck cleared off, seemingly none the worse for its rough experience.

CRESTED HAWK (*Baza subcristata*).—On 30th June, 1902, I was fortunate enough to get a good look with my glasses at close quarters at one of these curious Hawks. It showed no sign of fear of me, and as it clung to an almost upright limb, peering round at me, first on one side and then on the other, its actions and pose were most Parrot-like. I have not seen it before or since.

GREY FALCON (*Falco hypoleucus*).—Never saw these on the open country of Wyangarie, but since coming over on to the scrubby basalt ranges of Spring Valley I have noticed them more than once, and obtained one for identification on the 1st June, 1905. It proved to be a young male just changing from immaturity to maturity, the white feathers still showing among the grey. It had breakfasted off a Dove (*G. tranquilla*), and was just commencing a meal on a Betcherrygah Warbling Grass Parrakeet when I interrupted proceedings.

BLACK FALCON (*Falco subniger*).—To be seen fairly frequently on the open downs hawking Quail, &c., on which occasions it will follow a horseman or a mob of driven sheep long distances for the small birds that may be flushed; some very good falconry may then be witnessed. Seldom more than two or three are seen at once, but in one instance I saw eight after an unfortunate Pipit. The Falcons are terribly swift on the wing. One of the wonders of bird-flight seems to me to be the extraordinary pace a small Falcon can obtain in a short distance when making its swoop at its quarry.

LITTLE FALCON (*Falco lunulatus*).—This species is only to be seen very occasionally. It is the most daring, I think, of the family, and the most feared by its victims. What grand birds they would make for the falconer!

STRIPED BROWN HAWK (*Hieracidea berigora*).—Is one of the commonest Hawks we have, and at the same time the most foolishly confiding. Perched on the upper limb of a dead tree, it will allow a close

inspection to be made by anyone walking round just below, and screwing its head round as it follows your movements. General food appears to be grasshoppers, centipedes, lizards, *et hoc genus omne*. I never saw them tackle a live bird, though on one occasion I did see one after a Native-Hen (*Tribonyx ventralis*) on a claypan flat where there was no shelter for the Tribonyx. If it wanted to catch the latter it was making a very poor show, but it, on the other hand, it was only having a "lark," then it was frightening the life out of the fowl.

Of this and the succeeding species it is hard to say which is the more numerous here. I am inclined to say the present bird (*berigora*) is, although supposed to be the more Western form.

A nest that I inspected 12th November, 1902, contained a single chick. They are at times very much more numerous than at others, but this, I think, is due to the sort of season we are having, to the scarcity or abundance of certain food.

BROWN HAWK (*Hieracidea orientalis*).—The remarks made in connection with the preceding species as regards food and habits are applicable to this except that I do not think the dark bird is so confiding, and, as I have already stated, I am inclined to think that this is the less numerous of the two.

NANKEEN KESTREL (*Cerchneis cenchroides*).—May be seen any day. That the Kestrel is easily satisfied in selecting a nesting site is well known, and the following notes only serve to confirm the fact:—

1st January, 1898.—A brood of well-feathered young in the hollow limb of a coolibah.

13th September, 1899.—Three eggs in the deserted nest of a Wedge-tailed Eagle (*Uroactus audax*).

17th September, 1904.—Two nests, once Crows', I expect; three eggs in each.

4th October, 1899.—Nest in hollow limb of a coolibah.

15th November, 1898.—Three chicks in the deserted nest of a Kite (*Milvus*).

BOOBOOK OWL (*Ninox boobook*).—The Boobook is to be heard calling at night now and again. The cry resembles "buc buc" as often as "boobook."

WINKING OWL (*Ninox connivens*).—A dead Owl of this species that I picked up in October, 1899, was kindly identified for me by Mr. C. W. de Vis, of the Queensland Museum.

GRASS-OWL (*Strix candida*).—A small portion rescued from a Wedge-tailed Eagle in October, 1903, and which Mr. A. J. Campbell was good enough to identify for me, is my only certain evidence of this Owl, but on two or three occasions, sometimes in daylight, I have seen a similar bird, which from the locality—open grass downs—it is pretty safe to say was referable to this species rather than to *S. delicatula*.

CROW (*Corvus coronoides*).—The Crows flock in winter and nest in summer. I have seen a nest of fully fledged young on 29th November. My notes of eggs or young extend thence up to 24th March, on which day I examined a nest containing three squabs and two eggs, the latter just hatching.

They choose strange situations for nesting at times. I have seen them build up on the derrick of a windmill. At another time a nest with five eggs was found on the crown of a low polygonum bush in a dry swamp—this would not be more than 3 or 4 feet above the

ground; and at another they selected a pump stand at a dam, the top of the stand being 8 or 9 feet above water, and the pump in use every other day, which necessitated the Crows' collection of dry herbage being cleared off. However, they stuck to it, and, rain coming, the pump went out of use and the birds reared a family of three.

RAVEN (*Corone australis*).—The Raven appears far from common out this way.

MAGPIE-LARK (*Grallina picata*).—Common. Nesting from end of October to March; on the 24th of the latter month I found two nests, each with three fully fledged youngsters. I have seen no sign of migratory movement among these birds until July, 1904, when we had a great influx of them.

GROUND CUCKOO-SHRIKE (*Pteropodocys phasianella*).—This species is with us all the year round, but the numbers are certainly less during the winter months. They have a soft, liquid note, and are generally to be seen in small parties of three or four up to six and eight. I have found a nest with three young on 8th October, and on 11th and 15th November I saw nests with the birds sitting.

BLACK-FACED CUCKOO-SHRIKE (*Graucalus melanops*).—This bird is with us all through the year. I have seen a nest with young on the 19th November, another with old bird sitting on 5th February, and a third nest on 25th March with three well-fledged young.

LITTLE CUCKOO-SHRIKE (*Graucalus mentalis*).—Very seldom seen. They were here in the river timber in June, 1902, and again in August, 1904. When about, their cry, "Kiseek, kiseek," is easily heard, and cannot possibly be mistaken. The stomach of one I obtained on the Campaspe River contained grasshoppers and beetles.

WHITE-WINGED CHOUGH (*Corcorax melanorhamphus*).—The Chough just appeared in time to be included in its proper place in these notes: I saw seven yesterday—27th May, 1905.

WHITE-SHOULDERED CATERPILLAR-EATER (*Lalage tricolor*).—Is with us all the year round, but very much less numerous during the winter.

## Cuckoo Notes.

BY C. L. BARRETT, MELBOURNE.

WISHING to study the nestlings of some Victorian birds, and to photograph them at various stages of development, I spent last nesting season, with two companions, in the valley of the Olinda Creek, which winds out of the Dandenong Ranges in the vicinity of Lilydale. Some fifty of our familiar birds breed here in numbers, and we experienced little difficulty in locating many of their nests. The banks of the creek are clothed with tea-tree (*Leptospermum*), native hazel (*Pomaderris*), and musk (*Olearia*), intermingled with wire-like grass and bracken ferns (*Pteris*), which form miniature jungles where the White-throated Thickhead (*Pachycephala gularis*) and the Coachwhip-Bird (*Psophodes crepitans*) love to rear their young. Here and there are open grassy spaces, and the Blue Wren (*Malurus cyaneus*), the White-shafted



Young Narrow-billed Bronze-Cuckoo (*Chalcococcyx basalis*) ousting young Blue Wren (*Malurus cyaneus*).

FROM A PHOTO. BY C. F. KINANE



Fantail (*Rhipidura albiscapa*), the Red-browed Finch (*Egitha temporalis*), and many other charming little birds flit busily about in the sunlight: while among the tall timber on the mountain slopes such species as the Great Brown Kingfisher (*Dacelo gigas*), the Butcher-Bird (*Cracticus destructor*), and the Rosella (*Platycercus eximius*) are most frequently seen. It was to the Cuckoos, however, that our attention was mainly devoted, and as we had good opportunities for observing these birds, some of our field notes may prove interesting to others.

In early September the melancholy notes of the Pallid Cuckoo (*Cuculus pallidus*) were heard among the multitudinous bird-voices of the valley, and soon afterwards the Fan-tailed Cuckoo (*Cacomantis flabelliformis*) made its appearance, together with the Bronze-Cuckoo (*Chalcococcyx plagusus*) and the Narrow-billed Bronze-Cuckoo (*C. basalis*). During the month individuals of these four species arrived in increasing numbers, and were evidently searching for suitable nests in which to deposit their eggs, for a day seldom passed now without a Cuckoo being seen darting through the trees hotly pursued by a mob of small, angry birds (Wrens, Honey-eaters, Tits, &c.) While watching one of these chases the question arose, are these birds pursuing the Cuckoo because they are really conscious of its intention to shirk parental cares by leaving its egg in one of their nests, or do they mistake it for some bird of prey? If the former be the case, why do birds whose nests have been wronged remain apparently ignorant of the nature of the alien egg; and when the young Cuckoo is hatched and has murdered its foster-brethren, why do they guard and feed the parasite with as much solicitude as they would their own offspring had these survived? This is certainly a difficult question, and to complicate the problem we found several nests containing only addled Cuckoos' eggs, which would lead one to suppose that the owners of these nests had detected the imposition and abandoned their homes. The manner in which the Cuckoo deposits its eggs in the nest has never been satisfactorily explained, and although we often saw one of these birds in the vicinity of a nest which was afterwards found to contain an egg of its species, we were unable to catch one in the act. It seems highly probable, however, that those species whose eggs are placed in covered nests first lay the egg on the ground, and then, bearing it in their wide beak to the chosen nest, drop it gently in. It would be quite impossible for such a large bird as the Fan-tailed Cuckoo (*Cacomantis flabelliformis*), for instance, to enter the nest of the White-browed Scrub-Wren (*Sericornis frontalis*), where its eggs are commonly found, without considerably enlarging the entrance to the nest: and I cannot recall a single instance in which one of the many domed nests we examined, containing Cuckoos' eggs, showed an appearance of having been entered by any but the rightful owners. Being anxious to obtain photographs of the early life of the young Cuckoo, we selected a nest of the Blue Wren (*Malurus cyaneus*) which contained two Wren's eggs and one of the Narrow-billed Bronze-Cuckoo (*C. basalis*). This we

kept under close observation, and at length had our patience rewarded, for on visiting the nest one morning we beheld a blind and naked nestling, easily recognized by its larger size as the Cuckoo, in the act of ejecting one of its foster-brothers from the nest; the other unfortunate young Wren already lay dying on the ground beneath. The Cuckoo we judged to be about 30 hours old, while the young Wrens had probably been hatched a few hours earlier. We were able to secure a good picture of the young murderer at work, because on one of the Wrens being replaced in the nest, the Cuckoo at once proceeded to throw it out again, with the result that, during the two hours of our watching, he accomplished this feat no less than six times. Struggling desperately until it succeeded in getting the feebly resisting Wren into the hollow of its back, and balancing it there with extended embryo wings, the young Cuckoo, with head bowed between its strong legs, which, with claws firmly fixed in the sides, were straddled across the nest, worked its way gradually to the entrance, and on this being reached, suddenly raised the head and with a sharp upward lift of the body pushed the unfortunate nestling over the edge. His work accomplished, the young usurper gave a final shrug of the body, as if to make certain his burden was gone, and subsided exhausted to the bottom of the nest. It has been suggested (*Emu*, vol. iv., page 172) that the chief factor which operates on the young Cuckoo, and causes it to throw out its foster-brethren, is probably involuntary muscular action, incident on local irritation of the nerves of the skin when in contact with a naked nestling. I scarcely think the facts warrant us in accepting this theory without some reservation, for, if it has much in its favour, it still leaves unexplained a most important point—viz., the reason why a distinct hollow should be present in the back of a Cuckoo during the nestling period, and disappear in the adult bird, if not specially adapted by natural selection for the function it so admirably performs. Again, no one who has not actually witnessed the scene can realize the deliberate and apparently reasoning manner in which a young Cuckoo commits his crimes.

Cuckoo nestlings are very voracious. I have often watched them being fed, and found it no uncommon thing for the devoted little foster-parents to make over thirty visits within an hour to the nest with food for their charge. The *menu* is varied, but the larvæ of lepidopterous insects form an important item, as far as my observations go. The young bird develops rapidly on this diet, and the nest soon becoming too small for his increasing girth, expands to nearly twice its original size, and even then is filled to bursting point. The Cuckoo is fed by the foster-parents long after it has quitted the nest, in the vicinity of which it remains for some time, its plaintive cry for food being always responded to by its anxious guardians. While in the nest the Cuckoo displays a viciousness in keeping with its general character, for if one's finger be placed within reach it will be fiercely pecked until withdrawn.

The list of foster-parents for our Cuckoos is a long one, but in







Young Fan-tailed Cuckoo (*Cacomantis flabelliformis*) in Nest of Brown Tit (*Acanthiza pusilla*).

FROM A PHOTO BY C. P. KINANE.



Young Bronze-Cuckoo (*Chalcocorypha plagiata*) being fed by Brown Tit (*Arundinia pusilla*).



this district each species has an apparent preference for one particular nest. Thus the salmon-tinted egg of the Pallid Cuckoo (*Cuculus pallidus*) is commonly found in the nest of the Yellow-faced Honey-eater (*Ptilotis chrysops*), whose flesh-coloured egg it somewhat resembles. The Fan-tailed Cuckoo (*Cacomantis flabelliformis*) favours the White-browed Scrub-Wren (*Scricornis frontalis*). Here again the resemblance between the egg of Cuckoo and foster-parent is noticeable, though what advantage is gained by this similarity, in a covered nest where the eggs can be but dimly seen by the brooding bird, it is hard to imagine. The Bronze-Cuckoo (*C. plugosus*) and the Narrow-billed Bronze-Cuckoo (*C. basalis*) both select dome-shaped nests for their offspring, the former species showing a preference for the nest of the Brown Tit (*Acanthiza pusilla*), and the latter for that of the Blue Wren (*Malurus cyaneus*).

The illustrations reproduced, which are from negatives by Mr. C. P. Kinane, depict—(Plate I.) "Young Narrow-billed Bronze-Cuckoo ousting young of Blue Wren;" (Plate II.) "Young Fan-tailed Cuckoo in Nest of Brown Tit;" and (Plate III.) "Young Bronze-Cuckoo being fed by Brown Tit."

## Notes on Some Limicoline Birds.

BY (DR.) H. W. BRYANT, MELBOURNE.

(Read before the Bird Observers' Club, 25th May, 1905.)

I wish to confine myself to remarks on those species of shore-birds which I have had most opportunity of studying round the swamps and sea-shore of Hobson's Bay.\* Some of these birds commence to visit our shores about the end of June. I find a note in my game-book that on the 25th June, 1807, I shot a Painted Snipe at Little River. As a rule the ordinary Snipe arrive next, about the end of August, in small numbers at first, but becoming more numerous later, in September, October, and November, and remaining often until March. The Tringa, Curlew, Godwit, &c., do not usually arrive until October, and leave about April and May. A special kind of large Dottrel are again later in arriving, just after the disappearance of the Tringa. They come in big flocks, and afford very good sport.

Painted Snipe (*Rostratula australis*).—When first shot the colour of this bird is most beautiful, it having a kind of shot green tinge all over the feathers. After death this sheen disappears, and as with all stuffed birds the colours fade after a time. Another peculiarity about the Painted Snipe, that I have heard of, but have not so far been able to substantiate, is, that if one of them be placed in the game-bag with other game, it will cause the whole of the game in the bag to decompose very rapidly.

\* Dr. Bryant enumerates eleven species, and his field observations are interesting because written more from a sportsman's point of view.—EDS.

The Snipe (*Gallinago australis*) is the ordinary Snipe that you have all seen and eaten during the early part of summer. It is one of the most gamey birds that visit us, and it is highly prized both for the table and the sport it affords. This Snipe arrives here late in August, and continues to come over in some seasons in large numbers; in others, in very small numbers, I am sorry to say. The average weight is from 5 to 6 ozs., but I have shot them as late as March weighing over 10 ozs. Mr. R. Hall informs me that the Australian Snipe breeds in Siberia,\* and that it is more than probable that most of the birds that visit us come all the way from the tundras. This Snipe travels probably by night, and arrives about the period of the full moon nearest the end of August or beginning of September. The description of this bird you all know, so I will not inflict it upon you, and the sexes are exactly alike.

Marsh Tringa, or Sharp-tailed Stint (*Tringa acuminata*).—This bird is a little over half the size of a Snipe, and arrives in large flocks in September and October, settling in the swamps and marshes near the coast line. They are very fond of the insects and worms which inhabit the greenish seaweed noticed at low tide along the bay. In the swamps I have noticed they prefer the slightly brackish places to those where the water is fresh, and when the swamp is drying off and the water is low and the mud nice and black and oozy these birds are usually very thick, if not disturbed. They afford excellent sport, as they are very swift fliers, and if taken singly require a skilled shot to stop them; of course a shot into the brown makes a nice addition to the game bag, and I notice my friends do not miss many chances of this sort if they come their way. They are a delicious table bird if properly cooked, and in my opinion quite as good as the ordinary Snipe.

Curlew Stint (*Ancylochilus subarquatus*).—This species is not quite so large as the Sharp-tailed Stint, and has a curved bill instead of a straight one, which is also rather longer than that of the Sharp-tailed Stint. It is ashy-brown above, with dark centres to the feathers; rump and under surface white, and white bar on the upper surface of the tail. This bird is just as swift as the Sharp-tailed Stint, is not quite so good a table bird, but has exactly the same habits in every way.

Little Stint (*Limonites ruficollis*).—This little bird is about half the size of a Tringa, with ashy-grey back and head, white abdomen, and straight bill. These birds arrive at the same time as the Tringa, and are usually seen in large flocks. They are fonder of a sandy beach than the Tringa, and are exceedingly swift fliers, but being so small are hardly worth shooting as a table bird.

The Lesser Golden Plover (*Charadrius dominicus*) affects open lands in the neighbourhood of the sea-beach, or swampy places; it swims and flies rapidly, and closely resembles the European Golden

\* This Snipe is known to breed in Japan. See "Nests and Eggs" (Camp.), p. 823.

Plover. Of course we only see the bird here in its winter dress. I have never seen this bird in full summer plumage.

This Golden Plover is a very handsome bird, nearly as large as a Snipe, and quite as good for the table. These birds are very wary, but frequent the marshes about Port Phillip in fairly large numbers. They have favourite spots for feeding, and usually fly in certain directions, and by noting these points the sportsman often obtains a large bag.

The Greenshank (*Glottis glottoides*) is a constant visitor to our shores, sometimes appearing in small flocks, and at other times in ones and twos. It frequents the sea-shores and lagoons near the sea, preferring sandy points, where it often associates with the Sea Curlew, Marsh Tringa, &c. This bird is much taller than a Snipe, and yet not so heavy. It is a quick flier and very wary, and has a peculiar whistle when disturbed. (All these birds have a characteristic whistle, distinguishing them to the ear of the sportsman at once.)

The White-headed Stilt (*Himantopus leucocephalus*).—This Stilt is a tall, slender, graceful bird, of proportions so delicate that the long legs would seem quite out of keeping with the small body, were not its carriage so easy and well poised that no incongruity is noticeable. The specimen I am showing you was shot on the big swamp at Altona, and was one of a flock of over 100. They are rather ugly, laboured fliers, sticking their long legs out behind and making a tremendous row nearly all the time they are flying, the sound being comparable to a number of small dogs trying to bark whilst suffering from a severe cold in the vocal chords. Their food consists entirely of insects and small snails found on the water's margin, or captured by wading knee-deep into the water.

These birds make their appearance almost every year on the swamps about Altona and Werribee. I have never heard of their eggs being found about that locality.

The Double-banded Dottrel (*Ochihodromus bicinctus*) is a very beautiful bird, which visits different parts of the States in large flocks, remaining only a few days, and decamping just as suddenly as it comes. It prefers meadow lands to sea beaches, and owing to its habits it has not been studied closely.

The Double-banded Dottrel runs very swiftly, and the whole flock rise on the wing together, mounting high in the air, through which they pass very quickly, and after flying a mile or so suddenly wheel round and descend to a spot within a hundred yards or so of the one they left.

The Black-fronted Dottrel (*Egialitis melanops*) is found most abundantly in medium latitudes, but is not known in Tasmania.\* However, it is universally distributed over the Continent, affecting the shores of fresh-water streams and lakes in the interior rather than the boisterous sea-coast. It is a delicate and beautiful little

\* Mr. W. L. May states he shot one of these birds at Sandford, Tasmania, in 1896. But it was probably only an accidental visitor.—Eds.

bird, whose every attitude speaks of quickness and speed, from the long, slender tarsi to the long and pointed primaries crossing over the tail.

Of all the Dottrels this one is the tamest, for it will allow one near enough to observe the brilliant scarlet ring round the eye, and even when induced to take flight will alight again within a very short distance. Irides dark brown and eyelids bright red.

Knot (*Tringa canutus*).—The Knot is a very rare bird in this State. One obtained by me at the big swamp at Altona has under neck and breast light buff on a white ground; under tail is white, with patches of buff and black; under wing coverts are white, barred with black and slaty-black, not unlike the Snipe feathers in the same position. The back of head is slaty-grey, and the back and upper surface of the wings are a light slate with splashes of black, and some of the feathers have white margins. Upper surface of tail is white, with spots of black and a little buff, and some of the feathers are margined with black. The legs are black, and the bill, which is about  $\frac{3}{4}$  inch in length, is also black.

### South Australian Ornithological Association.

THE April-May meeting of this Association was held at the residence of Dr. A. M. Morgan, Adelaide, on the 12th May, when Mr. F. R. Zietz presided. Mr. J. W. Mellor drew attention to the reports and letters in the daily press concerning the destruction of Magpies for the purpose of poisoning their carcasses as baits for foxes. Mr. M. Symonds Clark reported that he had, in his capacity of honorary secretary of the Native Fauna and Flora Protection Committee of the Field Naturalists' Section of the Royal Society, brought the matter before the authorities, and that steps had been taken to prevent further depredations in respect to the birds.

The chief business of the evening was the further examination of the *Strepera* family, and a large number of skins from different parts of Australia, notably South Australia, was compared. Several skins recently collected by Mr. E. Ashby on Kangaroo Island were of particular interest; he had seen a large number of the birds there, and had identified them as the Black-winged Crow-Shrike (*Strepera melanoptera*), there being no trace of white in the wing, and a specimen shown tallied exactly with one from the Forrest Ranges in South Australia and one from Port Augusta in the north. Upon further examination of skins it was found that a young male from the Mt. Lofty Ranges, near Adelaide, was of a lighter colour than the Flinders Range and Kangaroo Island specimens. Birds from Yorke's Peninsula and Eyre's Peninsula in South Australia were found to be of a darker brown, with a very great amount of white on the wing, and it was considered that these birds were not *Strepera melanoptera* nor yet *Strepera plumbea*, and it was suggested



to designate them *Strepera fusca*, or the Brown Crow-Shrike. Specimens from Quorn, Laura, and Mt. Remarkable, in the north of South Australia, resembled *Strepera fusca* in general colour, but the speculum on the wings was not so defined, and not nearly so white. The investigation of the birds shown proved highly interesting and valuable in determining the habitat of the species.

Amongst other specimens of note that were exhibited were a Pink-bellied or Bourke Grass-Parrakeet (*Xeophema bourkei*), Varied or Many-coloured Parrakeet (*Psephotus multicolor*), Brown Fly-eater (*Pseudogerygone fusca*), and White-browed Scrub-Wren (*Scricornis frontalis*), by Mr. J. W. Mellor. Mr. F. E. Storr exhibited specimens of the White-eyed Duck (*Nyroca australis*) and the Freckled Duck (*Stictonetta naevosa*) from the River Murray. Mr. E. Ashby showed specimens of the Spotted Scrub-Wren (*Scricornis maculata*), Chestnut-rumped Ground-Wren (*Hylacola pyrrhopygia*) from Kangaroo Island, also a pair of Leach Cockatoos (*Calyptorhynchus viridis*) from the same place. This was noted as being a new locality for the bird, as it is generally found more towards the interior of South Australia. An egg of this species was also obtained from the Island by Mr. Ashby, and was exhibited by Mr. A. H. C. Zietz, together with an egg of another species of the Black Cockatoo for comparison. Mr. M. Symonds Clark showed a pair of the Black Cockatoo (*Calyptorhynchus funereus*) which had been collected on Kangaroo Island many years ago.

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### Nomenclature.

*The Condor* (vol. vii., Jan.-Feb., 1905) contains an article on nomenclature, dealing principally with the American O.U. code. It is proposed to issue a new code, under the editorship of Drs. Jordan, Evermann, and Gilbert, dealing with some of the knotty problems involved in the department of ichthyology: but as the principles underlying the new code have equal force so far as bird-names are concerned, they deserve the attention of the gentlemen who are revising the Australasian bird list, and are worth republication. They are summarized thus\* :—

“The value of a code depends not on the authority behind it, but solely on its simplicity, usefulness, and naturalness. Formal agreements among groups of authors are always marked by compromises in which fitness and exactness are more or less sacrificed in the interest of unanimity of action. These compromises one and all are discarded in the progress of science.

“The different canons in this code are based on those composing the code of the American Ornithologists' Union, and so far as possible the language of that admirable document has been followed.

“Of competitive names otherwise tenable, given by the same author, that one is to be preferred which stands first in the text. In case of

\* A.O.U. in this excerpt must be understood as referring to the American Union.

competitive names otherwise tenable, given by different authors of the same actual date so far as ascertainable, the one standing on the earlier page in its publication must be chosen. [NOTE.] The sole end of laws of nomenclature is that of fixity, and this is to be ensured only by the elimination among names once printed, of all element of choice by later authors. Even among twins, the laws of primogeniture recognizes one as first born. So with names on the same page.

“Canon VII. [Compare A.O.U. XVIII.] In case of competitive generic names otherwise tenable, published simultaneously in the same work, preference shall be given to the one standing first in the work. Of competitive generic names of the same actual or ostensible date (no exact date being ascertainable) given by different authors, that one is to be taken which is proposed on the earlier page of the volume in which it appears. When the same generic name is given to two distinct genera of animals at the same date (as far as ascertainable), the name appearing on the earlier page shall be deemed to have precedence.

Canon X. differs widely from the A.O.U. rulings. Compare with XXI., XXIII. “The type of a genus can be indicated by the original author only. This may be done by direct statement that a certain species is a type species, the leading species, the ‘chef de file,’ or by other phraseology conveying the same idea; it may be indicated by the choice of a Linnaean or other specific name as the name of a genus, or by some statement which shall clearly indicate an idea in the author’s mind corresponding in fact, if not in name, to the modern conception of the type of a genus. The type of a Linnaean genus must be, in the phraseology attributed to Linnæus, ‘the best known European or official species,’ included by that author within that genus.

“In every case, the determination of the type of a genus shall rest on evidence offered by the original author, and shall be in no wise affected by restrictions or modifications of the genus in question introduced by subsequent authors, nor shall the views or the dates of subsequent authors be considered as affecting the assignment of the type of a genus. [NOTE.] It is believed that the principle that a generic name must be fixed by its original author is one of vital importance in nomenclature. All processes of fixing types by elimination, or by any other means resting on subsequent literature, lead only to confusion and to the frittering of time on irrelevant questions. The method of elimination cannot be so defined as to lead to constant results in different hands. In general it is much more difficult to know to what types subsequent authors have restricted any name than to know what the original author would have chosen as his type. Most early writers who have dealt with Linnaean species have consciously or unconsciously encroached on the Linnaean groups rather than made definite restrictions in the meaning of the generic names.

“Canon XI. [Compare with A.O.U. XXIV.] In case a genus requiring subdivision or modification contains as originally formed more than one species, and the author of the genus does not in any way clearly indicate its type, the first species named in the text by the author as certainly belonging to this genus shall be considered as its type. [NOTE.] It can never be unjust to an author to regard his first named species as his type, and it can never lead to confusion to let the genus stand or fall with this first species. The same remark applies to composite species.

“Canon XVII. [Second paragraph.] As a name is a word without necessary meaning, and as names are identified by their orthography,

a generic name (typographical errors corrected) is distinct from all others not spelled in exactly the same way. Questions of etymology are not pertinent in case of adoption or rejection of names deemed preoccupied. [NOTE.] This canon prohibits change of names because prior names of similar sound or etymology exist. It permits the use of generic names of like origin but of different genders or termination to remain tenable. All manner of confusion has been brought into nomenclature by the change of names because others nearly the same are in use. Thus the Ornithologists' Union sanctions the cancellation of *Eremophila* because of the earlier genus *Eremophilus*, of *Parula* because of the earlier *Parulus*, and of *Helminthophaga* on account of *Heminthophagus*. On the other hand, *Pica* and *Picus* are allowed. In ornithology this matter has been handled by a general agreement on the relatively few cases concerned. But in other groups the matter is by no means simple, and every degree of similarity can be found. Thus the genus *Cantherines* is preceded by *Acanthorhinus*, a correct rendering of the same etymology; *Canthidermis* by *Acanthoderma*, also a correct form of the same word; *Thymallus* is preceded by *Thymalus*, *Lyopsetta* by *Liopsetta*. Rafinesque changes *Hiodon* because it sounds too much like *Diodon*; *Trachidermis* has been altered on account of its resemblance to *Trachyderma*, *Ateopopus* on account of its resemblance to *Ateopus*.

"Between forms like *Pachynathus*, antedated by the correctly spelled *Pachygnathus*, and *Aplodontia*, antedated by the more correct *Haplodon* and *Aplodon*, every sort of case may be found. If all names are regarded as different unless spelled alike, these matters offer no difficulty. Any other view gives no assurance of stability."

Although there are several other points of difference of a very minor nature, I shall close this short abstract with the following well-considered canon, a portion of which, as will be seen, departs considerably from present usage in ornithology and mammalogy.

"Canon XXIX. The authority for a specific or sub-specific name is the first describer of the species or sub-species. A name adopted from manuscripts should be ascribed to the person indicated as author in the original publication, whether this person be the author of the memoir in which the name occurs or not. . . . [NOTE.] This canon deprecates the practice of ascribing to the author of a paper descriptions and names furnished him in courtesy or otherwise by some other author. If a writer ascribes one of his species to someone else, we must take his word for it. Thus the manuscript species of Kuhl and Van Hasselt in the Museum of Leyden, although printed by Cuvier and Valenciennes, should be ascribed to Kuhl and Van Hasselt."

Much of the foregoing is doubtless debatable matter, but the reasons for each proposal are well worth thinking over.

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### Stray Feathers.

NINOX *v.* PODARGUS.—Adverting to a note in *The Emu*, vol. iv., p. 36, I camped at Parwan, Vic., during the last Easter holidays and on the Saturday evening, just as the day was drawing to a close the "Mopokes" began to call. I was too tired to move, but a companion went over to the tree (about 150 paces distant)

and shot the bird as it was calling, and it proved to be a splendid specimen of the Boobook Owl (*Ninox boobook*).—F. E. HOWE. Albert Park (Vic.), 5/5/05.

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PIED MUTTON-BIRDS.—This season I received two black and white Mutton-Birds (*Puffinus tenuirostris*) from Phillip Island, Western Port. One collected by Mr. A. P. Smith, Cowes, instead of the usual uniform dusky plumage, has its cap and throat white; abdomen and under tail coverts, excepting here and there a dusky feather, also white. The wings are white with a few dark patches. The bill is the usual dark colour, but the feet are parti-coloured. The second example was forwarded by Mr. Tom Bergin, San Remo, and may be generally described as having head and neck white and the rest of the plumage mottled sooty-brown and white.—A. J. CAMPBELL.

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EARLY MOULT OF BLUE WRENS (*Malurus*).—At the present time this neighbourhood offers ample ocular demonstration of Blue Wrens discarding their gay summer livery for the winter greys. I have never before known them to moult so early in the year. All the males one sees are half-way or even further through their moult. This means that sometime about midwinter they will regain their full plumage. A casual observer seeing the gaily attired birds at that time is apt to conclude that they had not lost their blue feathers at all during the winter, whereas their appearance in full plumage is accounted for by the moult having taken place very early in the year.\*—GEO. GRAHAM. Scott's Creek (Vic.), 3/3/05.

\* \* \*

" WHY DOES THE YOUNG CUCKOO EJECT ITS FOSTER-BRETHREN ? " In reply to Mr. Mattingley's query (*Emu*, vol. iv., p. 172), how does he draw the line between reason and instinct, and how know what are the bounds of either? Is it not more than probable that physical discomfort on the part of the " intruder " is the only reason for the efforts which cause the removal of other birds? Does either reason or instinct come into play here? Judging from human analogy, it is possible, certainly, that the movements spoken of are involuntary; but where the parent birds have gone so far along their particular line of development as to make a constant practice of fostering the rearing of their young on birds of other species, it is more than likely that instinct has its say. As to whether birds reason is too open a question to be discussed; but who can say they do not?—H. K.

\* Mr. Graham's note is valuable, as it confirms the experiences of other observers of this bird.—EDS.

POOWONG (QUEENSLAND) NOTES.—The Fairy Martin, or rather a small colony of them, began to rebuild a couple of weeks ago. Cold westerly weather set in for a day or so, and they suspended operations. A change again took place, and ever since they have been busy, and have just completed some of their nests.

The Pallid Cuckoo, incessantly uttering his melancholy note, has also been with us during the same period. It struck me that both these facts are unusual for this time of the year.

The little "Double-bar" Finch has been more or less in evidence since the big drought, and has just finished breeding with us. I have never known this bird as a resident here before. We are very few miles from the coast.

This year will be the greatest for Quail ever known in Queensland. The numbers of Varied or Painted Quail in timbered paddocks even last year were remarkable, another shooter and self bagging on two occasions 43 and 38 brace. This year they are everywhere, even where the Brown or Swamp bird is usually found.

For a very long time after the big drought the beautiful notes of the Butcher-Bird were nowhere to be heard, but both the common one and the Black-throated are becoming fairly numerous again. The Painted Snipe has this last season been seen in greater numbers than I have ever known.—B.S. 16/5/05.

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ROCKHAMPTON NOTES.—Ornithophiles everywhere will be pleased to hear that the devastation of avifauna in Queensland caused by the drought has been followed by a wonderful recovery. In fact, it appears as if there had been a "general resurrection." Around here the coast country is becoming alive with erewhile familiar birds. Laughing Jackasses are again to be seen and heard in the bush; Magpies and Butcher-Birds are numerous, and Magpie-Larks are numerous all over the country, waterholes now being filled. Ibises, which evidently shifted their habitats, have returned to their old haunts. Finches of several kinds are in thousands, their numbers conveying the impression they have been breeding without ceasing ever since the drought broke up. Kestrels came here after the grasshoppers and mice, and Piping Magpies (*Strepera*) are expected to renew their visits this incoming winter. Lesser Golden Plovers, which do not breed here, are numerous, and night hours are vocal with the notes of Stone and Spur-winged Plovers. In our western country the restoration has been even more remarkable. Downs country within view of coach roads and the railway is swarming with Water-Hens—a smaller variety than that common on the coast. They all appeared to be travelling eastward. Galahs, Corellas, Betcherrygahs, and others of the Parrot tribe are in dense flocks, and present a beautiful spectacle as they circle above the waterholes at eventide. Many varieties of Gallatorial birds, Dottrels, and Sandpipers are abundant. A flight of Snipe visited this locality in February.—WILL. M'ILWRAITH. 28/4/05.

A KAGU CHICK.—In reference to my notes on the Kagu (*Rhinocytus jubatus*) in *The Emu*, vol. iv., page 166, Mr. H. E. Finckh (Sydney) has thoughtfully supplied me with the following interesting remarks respecting the successful hatching of a Kagu chicken, together with a photograph of the same, which is here reproduced. (See Plate IV.) I believe the young of the Kagu has hitherto been undescribed. Mr. Finckh states:—

“On the 25th March, 1905, the birds paired, and on the 7th April an egg was laid. On the seventh day the egg proved fertile, and the birds sat on it for five weeks and one day, the male bird sitting most of the time—I should say four out of the five weeks. On the thirty-second day I observed the egg cracked, which cracks closed entirely as the egg cooled when the bird left it to feed (to keep the chick warm, I should think). I noticed the same for the next three days, the egg at times appearing quite perfect. On the next day (the thirty-sixth) the egg was indented, as if damaged from the outside; then I observed the male bird most carefully peel the egg to about two-thirds without damaging the inside skin, the chick moving freely and chirruping. Towards dusk he forcibly broke the skin, laying the chick partly bare, and then sat on it for the night. The next morning the young one was perfectly out and dry—a lively, fluffy ball, with a big and heavy head. The old ones were very anxious to feed it by taking up as many as six worms in their bills and dangling them round its head. The chick seemed very helpless, so I removed it at times and fed it with worms. The female bird did not much object to my removing the young, but the male always showed fight. The young took the feed readily, and grew stronger, but very seldom opened its eyes, which were very dull. Wet and cold weather then set in, the nest got a little damp, and on the eighth morning, unfortunately, I found the chick dead. The colour of the chick may be described as dark brown with light fawn markings, while the legs and bill are brownish, and the eyes black.”—A. J. CAMPBELL.

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TASMANIAN “STRAYS.”—Mr. H. C. Thompson, of Launceston, a member of the A.O.U., has the following note in his diary, which bears upon the question of the migration or otherwise of *Petrarca phoenicea* at the approach of winter, as touched upon by Mr. A. G. Campbell in his paper appearing in *The Emu*, vol. iv., p. 118:—“Launceston, Tas., 1904. Several Flame-breasted Robins were observed feeding at a manure-heap in the corporation yard on 21st, 28th, and 29th April, and as late as 15th June; these birds were very tame.”

Spine-tailed Swift (*Chaetura caudacuta*).—Why is it that these birds are seldom seen here until some date in February, and then almost always after a storm of wind and rain? My own theory is that, as they subsist here chiefly upon flying ants, and upon the winged forms of the termite (so-called “white-ant”), they time their arrival to suit the appearance of these insects, which usually



Kagu (*Rhinochetus jubatus*) Chick. Natural size, 8 days old.

FROM A PHOTO. BY H. E. FINCKH.





swarm in damp weather towards the end of summer. The following note is from Mr. Thompson's field-book :—"Launceston, 1904. Large number of Spine-tailed Swifts flying low among trees near Trevallyn on 11th February and 17th March. In Frederick-street, on 20th March, some of these birds were seen, at 6.30 p.m., flying low after white-ants." During the present season Mr. Thompson and myself made the following notes :—"W. Devonport, 1905. Spine-tailed Swift seen on afternoon of 21st February, at moderate elevation. Wind S.W., strong; weather fine, after disturbance with rain. This is the first Swift seen this summer." On 24th February about two dozen of these birds were seen, high up, flying singly or in small groups from the westward before a strong wind after another atmospheric disturbance.

"*Malurus gouldi*.—Feb., 1905. Two young males noticed, one on the 11th, the other on the 23rd, undergoing a moult, consequently presenting an extremely ragged appearance. These are usually said to be birds putting off their summer blue for winter grey. I consider that this requires considerably more proof, as I have myself seen, in the Tasmanian bush, males of this species in bright blue plumage during *every winter month*. We consider it probable that the ragged birds are young males hatched very early, and now beginning to assume the spring dress."—H. STUART DOVE. W. Devonport (Tas.), 8 3 05.

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DOMESTIC LYRE-BIRDS.—Mr. S. McNeilly, Drouin, has been good enough to furnish me with the following particulars of a Lyre-Bird (*Menura*) which he has had domesticated for 20 years :—

The bird was caught in October, 1885 (20 years ago), and had apparently only quitted the nest, his plumage being very scanty. He showed no signs of fear, and was quickly and easily reared. His food for the most part consisted of wood-grubs, beetles, small worms, and an occasional bit of meat. His plumage gradually improved, and after about 6 or 7 years he developed a magnificent tail, which he shed about every year. He appeared to take great pride in his plumage and had a bath regularly, after which he would arrange and clean the feathers. He soon became a great favourite, and had free access to the house, as well as a gully which adjoins the homestead. He would sometimes wander away for the day, but always returned at night, roosting in different places. The men about the place declared the bird a nuisance, and while any work was going on he was always in the way, hence his favourite saying—"Look out, Jack!" There appears to be nothing he could not mimic. The following are a few of his favourite imitations, viz. :—The noise of a horse and dray moving slowly, with the play of the wheels in the axle boxes, chains rattling, &c.; an occasional "Gee up, Bess"; the sound of a violin, piano, cornet, cross-cut saw, &c., &c. All the more frequent noises heard about the farm the bird learnt to perfection.

such as a pig being killed, dog howling, child crying, flock of Parrots, Jackass laughing, and many other imitations of calls of small birds, &c.

At the sight of a stranger the bird was very quiet, and would not continue his antics for some considerable time. He had, however, a great liking for following people like a dog, and on various occasions has been found some distance from home: in one instance he wandered three miles away.

The bird's answer to people saying "Poor Jack" was invariably "Not poor Jack, fat Jack," which the men had taught him to say. Jack succumbed to old age on Tuesday, 18th April last, after a long life of notoriety, and to the great regret of his many "admirers and friends."

Mr. McNeilly had a second bird, a hen, for about 6 years. She took to roosting in a large gum tree in the middle of the road, some distance from the house. She had many narrow escapes from being shot, which was subsequently her fate. She was at one time rescued from a box, about to be put on board a train, bound for Melbourne.

Lyre-Birds do not appear to thrive unless caught very young. One bird (a hen) which was caught on the nest and kept in a wire-netting enclosure, fretted away and died.—F. P. GODFREY.

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CLARKE ISLAND (BASS STRAIT) NOTES.—The season here, dating from August, 1904, until March, has been remarkably dry and cold, except for a severe heat wave in January, which lasted for a week, with thermometer ranging from 93° to 95°. The birds which usually visit us, such as the Wood-Swallow, Swift, &c., have been conspicuous by their absence, or nearly so. The smaller birds, also, are not nearly as numerous as when the seasons were regular. The Wild Duck is only to be found on the sea-coast at Clarke Island, as the lakelets are nearly all dry, and the water in the remaining ones is too stagnant for their liking. On Flinders Island, at the chain of lagoons at the south-eastern end of the island, Ducks are to be found in great numbers, Swans, and also Wild Geese. Of late years the Wild Goose has appeared to a great extent around the coast of this island, especially on the south-western side at a place locally known as White Mark, this place possessing chains of lakes for miles, abounding with weeds and soft grass round the edges, which seems to take their fancy.

The Brown Quail is with us always, and the Painted variety is also more in evidence than in former years. It is curious to note how, as the Mutton-Bird becomes scarcer, the Little Penguin takes its place. Indeed, in some rookeries, they are, I am told by people who earn a living capturing the first-named, gradually ousting them altogether. The Mutton-Birds are thought to be more numerous this year, but still one cannot build on this until the "season" is over and one notes results. The Brown Hawk, which used to nest here largely, has almost deserted us, although one sees the birds frequently.

The Silver Gull has laid satisfactorily along the coasts, also the Black and Pied Oyster-catchers, building in the same locality year after year. The Brush Bronze-wing Pigeon is to be seen in fair numbers. Last December one could find their nests in nearly every thicket, containing their two white eggs. Owing to the flat formation of the nest, in hasty flight the bird will often kick the eggs on to the ground, and I have seen the young ones in a similar condition. It is very difficult to secure these birds for the aviary, as they are extremely suspicious of traps, &c.

The Wedge-tailed Eagle has also departed to "pastures new," or else terminated their long life, as they have not nested in their old haunt, although the nest is still intact. We have a fair variety of Honey-eaters, the Spinebill and Yellow-throated species being the most conspicuous. Have not seen any eggs of the Spur-winged Plover last season, although the birds have been fairly plentiful. The Cape Barren Goose is flourishing on Passage and Forsyth Islands, their chief homes, and one will often see as many as 50 in one cluster upon the sea-sands when the sportsman has made his unwelcome visit.—J. D. MACLAINE. 7/3, 05.

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FIELD NOTES ON CUCKOOS.—So very little is known of the habits of the different Cuckoos that a few facts and some of the theories derived from my experience may not be amiss. Of all birds I think the Cuckoo is the most interesting. I remember once, when playing truant from school, I went into the bush, and on the outskirts of the township (Stawell, Victoria) found a nest of the Scrub-Robin (*Drymaedus brunneopygius*),\* and in it an egg I had not before seen, but experience has since taught me that it belonged to the Pallid Cuckoo (*C. pallidus*). I have repeatedly taken two Cuckoos' eggs in the one nest, but they were always one each of the Bronze species—the Narrow-billed and Thick-billed—though last year my friend Mr. F. P. Godfrey took two of the Thick-billed Bronze-Cuckoos' eggs in the nest of the Yellow-tailed Tit (*Acanthiza chrysorrhoa*), but then one was partly built into the nest—not an uncommon thing. One day last year I took an egg of the last-named species in a nest of *A. chrysorrhoa*, but the bird had evidently made a mistake, as the egg was fresh and the young had flown, this being indicated by the quill shells inside; and on another occasion, in a nest of *A. chrysorrhoa*, there was only one egg, and that a Cuckoo's, hard set. This bears out a fact I have noticed, that the Cuckoo either eats or destroys an egg or two before depositing her own. For instance, the ordinary clutch of *Acanthiza pusilla* is three, and sometimes four, but whenever I took a clutch containing a Cuckoo's egg there would be one or two only of the foster-bird's eggs. On two occasions I have seen the Cuckoos visit the nest where their young was. Once at Whittlesea (Christmas, 1902) I found

\* Not previously recorded as a foster-parent of the Pallid Cuckoo. — E.D.S.

a nest of *A. chrysorrhoea* and in it a young Cuckoo, and while there the parent bird came to the nest and fed the young one; meanwhile the foster-parents were in a great state of excitement, and repeatedly dashed at her until she left the vicinity. On the second occasion I was at Ringwood (3rd October, 1904) in company with Messrs. F. P. and R. Godfrey. While having breakfast about sunrise near a dam, we were surprised by the continuous noise made by a pair of *A. pusilla* in a creek a few yards distant, and on walking to the spot disturbed a large bird, the flight at once proclaiming it the Fan-tailed Cuckoo (*C. flabelliformis*). In a swamp tea-tree, low down, was a nest, and in it a young Cuckoo with its capacious mouth open, crying for food. It would be interesting to know if they do tend their young, and thus remove some of the hard thoughts we entertain of them, as I have repeatedly seen them about a nest where their egg or young was.

I took a clutch of the Black-and-White Fantail (*Rhipidura tricolor*) and with them an egg of the Pallid Cuckoo, and on the same day (31st October, 1904) Mr. F. R. Godfrey took a clutch of the Rufous-breasted Thickhead (*Pachycephala rufiventris*) with an egg of the same Cuckoo.—FRANK E. HOWE. Albert Park (Vic.), 23.3.05.

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KURRAJONG (Q.) NOTES.—The little Tawny Grass-Bird (*Megalurus galactotes*) is in hundreds here now. The last (3rd March) nest I observed was that of a Sericornis, with two eggs, in a bush about 8 feet high. Is it not unusually early for them? I have never noticed them earlier than May before. The Cockatoo-Parrakeets made their appearance yesterday, and today I have seen a good many. Little Doves showed up a few days ago, and are now in dozens. Another bird that has drawn my attention is the Bee-eater (*Merops*). I saw three or four a fortnight ago, and since then they have been increasing. I wonder why they come here? Certainly not to breed—it is not suitable country, and besides it's too late. Perhaps they were passing through *en route* for their winter quarters.

We have a good crop of figs just ripening, and three fine old Magpies (*Gymnorhina tibicen*) sampled them, and began a feast, so we had to shoot them. I never saw them tackle fruit before. These were handsome fellows and always used to "camp" in the fig-tree in the heat of the day; therefore I think they must have got "tasting." Certainly no more have visited the figs, and there are plenty of the birds always near the house.

Hawks are very much in evidence this year. They are attacking the fowls at all the stations round, and the poor "chooks" are so harassed and worried that they stay under shelter nearly all day.\*

\* Is it not possible that the presence of ticks or some other form of insect life on what Mr. Barnard calls "chooks" would be sufficient to account for the fowls being harassed as described?—EDS.

We shoot one or two Hawks here every week—last week the number rose to three. At some places the fowls are said to have hardly any feathers left on their backs, but I have not heard of any being killed. Goshawks (*I. approximans*) are the chief offenders, but Brown Hawks, Spotted Harriers, and Sparrow-Hawks all join in, and I have even seen the little Kestrels hovering over the fowl-yard. Why they all do it I can't make out, as the bush is "chock-full" of small birds, and grasshoppers are in thousands. I shot one Brown Hawk and found nothing but grasshoppers in his craw. Wood-Swallows (White-browed and Masked varieties) seem to be also following the "hoppers," as they are in countless flocks, but at present seem to have no intention of building. Here is a Wren (*Malurus melanocephalus*) note that may be useful:—On the 25th of February I found a nest just outside the garden containing four eggs. I took them, but the birds stayed about, and on 21st of this month (March) I found a second nest with three eggs. On looking at them the next day, I was astonished to find that they had hatched. Quick work, wasn't it? There were only two birds to be seen at any time, and they were both "browns." Was one an immature male? I think so, because in all the other families that I see about there is always one red and black bird, so I concluded they were not laying out of season. If there had been a red and black male with these I must have seen him, as they were close to the house for over a month and are still here.—  
ERNEST D. BARNARD. March, 1905.

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"THE SCHOOL IN WILD LIFE."—The publication of Mr. F. M. Littler's article on "The School in Wild Life" (*Emu*, vol. iv., p. 57, 1904) induces me to forward the following notes of my own experience of birds and their songs. They hardly support the theory that the song of a bird is instinctive, and I am led to conclude that birds do learn their song from their parents, and that in many cases their schooling occupies a fairly long time.

The Long-tailed Blue Wren (*Malurus gouldi*), I have found, acquires its notes from its parents by degrees, and is at least nine months old before its song is perfect. A male which I kept in a cage could at the end of 18 months articulate only half a bar.

As to the Laughing Jackass (*Dacelo*): every spring for 20 years past I have observed the parents coaching their young, and noted how the adults would sit on a branch with the learners and encourage them by many prolonged laughter-like notes. Little by little the notes of the young birds changed from "Yah! yah! yah!" to the cackle with variations. Until the full song is acquired the noise of the "school" is very trying to one working in the vicinity.

So with the Magpie (*Gymnorhina*). The various calls and singing notes are learned piece by piece; the alarm note first, then a note of anger, afterwards fragments of song, until the whole song is acquired. In this connection I may record an incident

which occurred within my own experience. A neighbour of mine fostered a young male Magpie, and although Magpies were numerous in the vicinity and this one had full freedom, it could be heard crowing like a "rooster" and singing from the tops of tall trees "Merrily danced the Quaker's wife." Until it was two years old it had none of the native bird song. At that age it joined the wild birds, and soon procured a mate. Occasionally it returned to the house, and sometimes followed the plough when food was to be easily got. In time it became not unusual to hear a strain of "Merrily danced the Quaker's wife" amongst the notes of many wild Magpies scattered over a considerable surrounding area. It seems not unreasonable to infer that the young of the domesticated bird had learned from the parent part of the tune above mentioned and intermixed it with the wild notes of the species.

A Canary in my possession—a splendid songster—lost its song for a long time and picked up the twitterings and chirpings of the Sparrows which infested the place. When another Canary was brought as a mate the first bird regained its full power of song, although it for a long time intermingled with its own proper song the chirpings of Sparrows.

It has been urged that the Cuckoo is an example of a bird which necessarily inherits its notes. However, although its call suffices to bring the sexes together at pairing time it is a very simple matter compared with the varied song of many species of birds. I feel convinced that it is acquired by the young Cuckoo from members of its own species long after leaving its foster-parents, with whom it hardly remains long enough to acquire any of their notes.

Of course the structure of the vocal organs may make it impossible for some species to imitate others. For instance, the guttural-voiced Wattle-Bird (*Acanthochera*) or the Laughing Jackass (*Dacelo*) could never be expected to learn the clear piping notes of the Butcher-Bird (*Cracticus*) or the Magpie (*Gymnorhina*).—GEORGE GRAHAM. Scott's Creek (Vic.), 6, 3, 05.

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AUTUMN NOTES. —Autumn is the time to look for many interesting notes among the birds. To the naturalist autumn is as full of meaning as the springtime, when even the hardest head finds something to rejoice over in the breaking forth of new life. A certain steady preparation for the coming winter can be detected everywhere. Trees, withdrawing their active sap from the branchlets, allow their leaves to chase each other like brown butterflies along the streets. Birds come, birds go, in search of more suitable winter quarters, and they, like animals, lay by great layers of reserve tissue for the trying season. All this suggests to us in the city the great concentrating movement of Dame Nature in all her forms. She, at this time of the year, lays up her stores for the winter months, and also sufficient energy to meet the first call of the following spring.

The male Blue Wren (*Malurus cyanus*) is one of the first birds to make the change to a winter garb. Early in March he can be found in the dull brown plumage which his little mates keep the whole year round. At least this is the assumption to which one is led by watching a little family of four in the garden. They are headed one week by a male in blue, the next week by a bird with a blue head and ear coverts, flecks only of blue and black being visible on its otherwise brown mantle, and the third week the leader differs only from the rest of the party in retaining the black of the legs and bill and the blue of the tail. Some folk aver that the plumage is not changed for winter, because birds in blue livery can be procured every month of the year. That is true, but they are the exceptions, not the rule.

Hawks are always in evidence about Melbourne during the months of February, March, and April. They make the autumn their holiday period between one nesting season and the preparations for the next. Several other birds, however, do this. Rosellas and White-eyes (*Zosterops*) come in to prospect for late fruit; Wrens and Robins come about our homes.

We must not forget those who have left us, preferring to spend the winter in some northern part. Careful watch must be kept for the day of departure, else they will slink away silent and unobserved. Both the Reed-Warbler and the Sacred Kingfisher disappeared the first week in April. A large flock of Magpie-Larks (about 50) was seen about the same time flying over, but it is not yet stated that they make a practice of migrating.

About the 1st of April one can generally look for the arrival of the Flame-breasted Robin. This year the long, fine autumn kept it back until the 10th of the month, for it is noticed to appear with or immediately after the cold drizzling weather that turns the season. Where these birds come from is not quite settled. The old idea that they all come from Tasmania is being gradually exploded. Mr. A. R. Reed, of Hobart, in July, 1904, sent me birds in the flesh, with word that they were just as plentiful then as in summer. The records of the species being in the nesting season on the highlands of the Buffalo, Baw Baw,\* and Dandenong Ranges and in Cape Otway† seem to complete the evidence for their summer residence. A significant fact is that the earliest date in my note-book of arrival was 20th March, 1899, at Rutherglen, in the open country just north of Buffalo.

Three times this autumn have I identified the female (or young male) of the Pink-breasted Robin—at Geelong, Somerville, and Toorak. The close likeness of the winter dress to that of *Petroica phoenicea* possibly leads to its being overlooked. The main difference lies in the wing-patch, which is rich brown instead of white.

Honey-eaters are always plentiful when food is procurable. The first gurgling note of the Spiny-checked was heard on 10th April. Flowering eucalypts along the river at Burnley attracted, besides

\* *Emu*, vol. iv., part 4, p. 165.

† *Geelong Naturalist*, vol. i., No. 3, p. 50.

that species, a few Wattle-Birds and a mob of eight Warty-faced Honey-eaters. For nearly a week all three species wrangled over the blossoms. The last-mentioned is a rare visitor to these parts.

In the gardens the White-plumed Honey-eater has developed a knowing trick. Large flowers like tecomas and cannas it cannot easily search, so it coolly nips a hole in the side of the bell to devour the nectar. The Spinebill is a constant autumn visitor to the city gardens. Away at Melton, on the timbered sides of a sunken creek, great numbers were seen one day, busily prospecting the late blossoms of the mistletoes, which were there in great quantity. The bird seems fitted to the flower, and comes away dusted about the face with pollen. A little later, when the fruit is ripe, there will be a fine harvest for the Mistletoe-Bird (*Dicaeum*). Already about Melbourne this bird is dropping the slimy seeds of an earlier-fruiting mistletoe upon the oaks and elms and fruit trees.

At Rockbank on 15th May, 1905, a walk was taken across the basalt plains, and where the Werribee River is flanked by long lines of box-tree forest, several species of birds were noted which belong properly to the northern portion of Victoria. The Whiteface (*Xerophila*), the Restless Flycatcher, the Brown Tree-creeper, the Fuscous Honey-eater, and the Black-chinned Honey-eater all witnessed to the possibility of forms creeping southward along open and dry areas suitable to their needs.

A Delicate (Lesser Masked) Owl was recorded here a week or two back—a rare bird now. It must have ventured out from the hills. At Riddell (35 miles from Melbourne, to the northward) a pair of Crimson-winged Lorries was shot in February. Their presence is unaccounted for. Another bird that seems to have wandered far from its habitat this autumn is the Little Turtle Dove, one of which was seen at Burnley last month and another at Myrning.\*

Lorikeets are in great numbers wherever eucalypts are flowering, and this season many hundreds of acres on the Mornington Peninsula have blossomed. The trees will get a valuable clearing of scale-insects from these worthy foresters. Though the birds primarily are attracted by the gum blossoms, they have a sweet tooth for the timber-destroying scale-insects in the forests they patrol.

At Burnley last month another little forester put in an appearance—a Spotted Pardalote. It lived a solitary life for some time in a patch of young gum trees planted for shelter in a public garden. It prospected high and low for eggs and young of leaf-destroying insects, which are unfortunately all too common on our native plants. If there were more of these little tree-top feeding birds about, with Tree-creepers and Sittellas to second their efforts by borer-catching upon the bark and branches, I am sure we should not find the gum trees languishing as they do, and leaving their gaunt skeletons near the city, a mute witness to the folly of driving away insectivorous birds.—A. G. CAMPBELL. Melbourne.

\* See "Nature Notes," *Argus*, 5/5/05.



## From Magazines, &c.

BIRDS TEACHING YOUNG TO SING.—A note by Mr. W. H. Parkin in the February *Zoologist* (p. 71) has a bearing on the question whether song is acquired or inherited. "A Sky-Lark had young ones just out of nest; on the old bird returning and feeding them, it remained on the ground close to the fledglings, and broke out into full song, which it continued for about a minute."

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MIGRATION OF WADERS.—An article by Austin H. Clark, in *The Auk* for April, deals with "The Migration of Certain Shore Birds," a fascinating subject. Starting from the premise that birds prefer a beam wind, and therefore fly diagonally across the "trades," Mr. Clark sketches the probable routes taken by the Golden Plover (*Charadrius dominicus*) in its migrations from North to South America and back.

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HARD PRESSED.—Mr. A. E. Kitson, F.G.S., read a newspaper cutting relating to the pursuit of a Laughing Jackass by a Hawk. The bird sought refuge within the walls of an hotel, and, in its extremity, dived through the upper pane of one of the commercial room windows, and then, after making several ineffectual efforts to pass through a large mirror over the fireplace, regained the street by "taking a header" through another closed window.—*Victorian Naturalist*, April, 1905.

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CELEBRATED ORNITHOLOGISTS.—*The Condor* for March-April establishes a good precedent with its four photographs of eminent ornithologists—Dr. P. L. Selater, Prof. Cabanis, Mr. Howard Saunders, and Count Schmidhoffen. A *fac-simile* of a page of MS. of Prince Charles Lucien Bonaparte, with a lithograph of the Prince that strongly reminds one of his great cousin; an article by Leonhard Stejneger in support of Palmén's theory that birds migrate along the routes whereby they anciently immigrated into a country; and a number of local bird-notes, complete the issue.

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AUSTRALIAN BIRDS IN ENGLAND.—At the Crystal Palace Bird Show held in January last, in the Parrakeet class the first prize fell to a Varied Lorikeet (*Plilosclera versicolor*) owned by Miss C. R. Little. Mallee (*Barnardius barnardi*) and Yellow-collared (*B. zonarius*) Parrakeets and King (*Aprornis cyanopygius*) and Red-winged (*Ptilinopus erythropterus*) Lories were also on view, according to *The Avicultural Magazine* (Feb., 1905), as well as a hybrid "Red-rumped Rosella." In the class for Grass-Finches, &c., a Yellow-rumped Finch (*Munia flaviprymna*), owned by Mr. H. E. Pier, won first prize and special for the rarest bird in the show. A pair of Red-faced Finches (*Bathilda ruficauda*) and a Crimson Finch (*Neochmia phacton*) were also shown.

REGURGITATIVE FEEDING.—Mrs. Irene G. Wheelock, who contributes a paper on "The Regurgitative Feeding of Nestlings" to *The Auk*, Jan., 1905, has records of 187 broods of young birds she has had under observation, which show that in every case where the young were hatched in a naked or semi-naked state they were, for a period varying from one day to four weeks, fed by regurgitation—*i.e.*, the parents swallowed the food, carried it in their craws to the young, and then disgorged it, sometimes partly digested, into the latter's mouths. Young birds, however, which when hatched are covered with down were found by the writer to be fed directly with fresh food from the time of hatching.

\* \* \*

DUCK AND EAGLE.—In *The Geelong Naturalist* (Dec., 1904) Mr. J. F. Mulder has the following observation:—"In going over one of the forest rises I came suddenly on a Mountain Duck (*Casarca tadornoides*), which was standing about forty yards away, in front of me. It appeared hurt, for as I rode on it flapped along the ground, dragging its legs behind it, the acting being so clever that I really thought it had been shot. I was not the only one deceived. A pair of Whistling Eagles (*Haliastur sphenurus*) kept swooping down on it as it was fluttering along the ground. When the Eagles darted down the Duck lay flat in the dust, but started on again when I approached. My suspicions were aroused by its getting gradually further away. At last it rose straight up in the air, rivalling the Eagles themselves in vigour of flight, and disappeared."

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A NATURE CALENDAR.—Mr. James R. McClymont, M.A., supplies *The Zoologist* (April) with "Monthly Notes for 1902, taken in the South of Tasmania." Not the least interesting, albeit brief, are the bird observations. On the 17th August he notes "*Eucalyptus globulus* in flower." The following day "Swift Lorikeets appear." About the end of November "Swift Lorikeets disappear." In the interim did the Lorikeets breed? Or were they merely attracted by the flowering blue gums? These are interesting questions. Some records kept during November proved that the Magpies (*Gymnorhina*) commence carolling about one hour before sunrise, although in one instance a bird was heard 1 hour 18 minutes before sunrise. Of course the dawn is comparatively long in November. Would the Magpies commence so early before sunrise, say, during a winter month?

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SUB-SPECIES.—A paper in *The Auk* for January, by Dr. Jonathan Dwight, on "Plumage Wear in its Relation to Pallid Sub-species" holds out some prospect of relief from the interminable splitting of species. To establish a new "geographical race" it is necessary, says in effect the writer, to show that the difference relied on exists

in the feather at the time of growth—that is, in the birds at the moult; for the differences observable in birds from different localities in breeding plumage may be due to climate acting merely on the feather of the individual, but leaving the species as such unaltered. No doubt the conscientious application of Dr. Dwight's test would considerably reduce the number of American sub-species, and so go to obviate the need for trinomial nomenclature. This is a road on which we in Australia have not yet travelled so far as our American cousins, but it is well to be wise in time.

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BIRD-KINDNESS.—The Rev. R. G. Pearse (Natal), writing to a recent number of *The Spectator*, states:—"I beg to give you an account of bird-kindness witnessed by a doctor, another minister, and myself here in Durban. During an exceptionally heavy tropical rain, three weeks ago, two Ducks of the common half-bred native and Bombay variety got washed in the flood down the Umgeni River, which flows through the Town Gardens. The Ducks both got entangled in the barbed wire and wire netting which crosses from bank to bank. One managed by much flapping of wings to extricate itself; the other seemed, however, to be on the point of drowning, when a large male Ostrich stalked out of the bush and waded into the river, lifted it bodily out of the water, and carried it ashore by one wing. The Duck was not badly hurt, but its rescuer was severely torn on its thigh muscles by the barbed wire. I may mention that this all is the more remarkable as the Ostrich, with rare exceptions, buries its head in the sand during a storm, and will starve to death sooner than move."

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SINGULAR SITE FOR A SATIN-BIRD'S BOWER. Writing in *The Geelong Naturalist* (Dec., 1904) Mr. J. F. Mulder states:—"A small party of Satin Bower-Birds (*Ptilonorhynchus violaceus*) has built a bower in a pine tree over my kitchen at Bambra (10th October, 1892). They are very interesting, and amusing in their habits, and make such strange noises, sometimes like a cat snarling, and sometimes a whirring noise like an Owl; then again they imitate other birds so closely as to deceive anyone who did not know, and make one think there were five or six different birds in the tree. When watching these birds they were continually jumping about from one branch to another, and appeared to be playing together. As there were no black ones among them, I concluded that most of the birds were females or young males. The bower, which had a passage right through it, was composed of a lot of broken pine branches, laid across other limbs of the tree and built close to the trunk. In flying from one place to another the birds appeared to move off in a succession of small flights. Two or three of the flock fly to a neighbouring tree; as soon as they alight, two or three more start. The first lot go on, then two or three more fly out from the first tree. The birds in the second tree go to the

third; those in the third fly to a fourth tree, and so on until the whole flock has gone."

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NESTS AND EGGS OF VARIED HONEY-EATER (*Ptilotis versicolor*).—In *The Victorian Naturalist* for March (vol. xxi., p. 167) Mr. A. J. North, Ornithologist, Australian Museum, has described a nest and two eggs of the Varied Honey-eater collected on Franklin Island, off the north-eastern coast of Queensland. The specimens, together with the parent birds, were taken by Mr. A. F. Smith, 16th October, 1904.

The nest is an open cup-shaped structure, rather scantily formed of fibrous rootlets, held together with plant down intermingled with webs and egg-bags of spiders, the inside being sparingly lined with pale brown fibre, and at the bottom with a small quantity of silky white plant down. It was built in a shrub at a height of 7 feet from the ground, and is firmly attached by the rim on one side to a thin leafy branch, two leaves also being worked on to the outer portion of the opposite side, where Mr. Smith informed Mr. North it was fastened to two upright twigs. The eggs are similar in colour to those of *Ptilotis sonora*.

Mr. North concludes with the remark that "similar eggs taken by Mr. E. M. Cornwall, of Cairns, have recently been described as the eggs of *Ptilotis fasciogularis*."\* Regarding this assertion, Mr. Cornwall writes:—"With reference to the eggs of *P. fasciogularis*, I am quite satisfied that my identification is complete, but evidently I made a mistake in jumping to the conclusion that the bird, nest, and eggs taken by Mr. A. F. Smith on the Franklin Islands were the same species. I do not think there is anything remarkable in the fact that the eggs of both species are similar, for the birds are about the same size and very closely allied."

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*Bird-Lore*.—The last number of this magazine to hand (Jan.—Feb., 1905, vol. viii., No. 1, pp. 45–120) has for a principal feature a record of what is being done in the way of bird protection in North America. "The History of the Audubon Movement" tells what the Audubon Societies and the American O.U. have been doing in this direction, and the results make an Australian ornithologist jealous. Not only do the first-named societies publish a magazine of their own, "to advance the work already so well under way, give stability and permanence to that work, and broaden the sphere of effort in such directions as may with reason suggest themselves," but individual members and affiliated bodies spare no effort in the cause. With a membership of about 30,000, of course much may be done. Massachusetts claims the honour of having started the present system of State Audubon Societies. From humble beginnings in 1884–5 the Biological Survey, in connection with the U.S.A. Department of Agriculture, has grown. From Massachusetts the movement of bird-protection spread throughout the States. Maps are

\* *Emu*, vol. iv., p. 137.

given to show what has been done. *Bird-Lore* notices the fact that in North Carolina the efforts of the labourers in the cause have been so far recognized by the State Government that it acts in that region as a "Game Commission," "with powers of appointing bird and game wardens, who can arrest violators of the game laws." One of our great mistakes in Australia has been that everything of this kind has been left in the hands of the police, who are so overweighted with duties that what would naturally be considered an outside one has small chance of being attended to. The coloured plate in this number continues the series of Warblers, and a very full Christmas bird census occupies pp. 22-31.

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"BIRD NOTES FROM OLINDA VALE."—In *The Victorian Naturalist*, vol. xxi., p. 162, new ground has been broken by Messrs. C. L. Barrett and E. B. Nicholls—with nesting notes of familiar birds, illustrated by the camera by Mr. C. P. Kinane.

The majority of the notes were made in the valley of the Olinda Creek about three miles south-east of Lilydale. Weekly visits were paid the district during the spring and summer months, with the result that 35 species were observed nesting, while photographs of nests and eggs or young of many were secured. Although five eggs for a clutch are sometimes recorded for the Spotted Pardalote (*P. punctatus*) it is surely a rare occurrence to see five young reared. One of Mr. Kinane's successful pictures shows a row of five spotted youngsters (4 weeks old) perched on a twig. Another picture shows a newly-hatched Bronze-Cuckoo in the act of ejecting its foster-nestling—a young Wren. (The subject of this illustration has been enlarged and is reproduced in this issue of *The Emu*. (See plate I.)

The other photographs reproduced in *The Naturalist* depict a female Rufous-breasted Thickhead near her nest containing two fledglings, and a Bronze-Cuckoo (16 days old) being fed by a foster-parent (*Acanthiza pusilla*).

Although not an Australian bird, these interesting field observations conclude with a note on the Starling (imported). It appears that last year a settler picked 18 cases of cherries from 20 trees. From the same trees this season he only collected about 2 lbs. While away on a fishing excursion one Sunday afternoon the Starlings swooped down and cleared his orchard. *Moral: Don't go fishing on a Sunday.*

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THE PERIOD OF INCUBATION.—In *The Avicultural Magazine* for March Dr. A. G. Butler has a valuable article on the duration of incubation in different species, a little-worked but rich field for study. The desire for exact knowledge, the probability of a connection between the duration of incubation (as of gestation) and of life, and the obvious importance to the breeder of birds of knowing when eggs will hatch, should all have tended to direct attention to

the subject, as the writer points out; but zeal for egg-collecting would seem, in England at least, to have outweighed these considerations, and, copious as are the data which Dr. Butler has collected, one cannot but be struck with the great number of gaps yet to be supplied. The observations recorded are almost all of birds in captivity, and the conclusion pointed to is that the longer-lived birds take the longer time to hatch their eggs. Appended is a list of the Australian birds mentioned by Dr. Butler, with the duration of incubation given for each; members of the Union resident here may be able to make useful comparisons from their existing records or from future field and aviary notes:—

SPECIES	Duration of Incubation. Days.
Crimson Finch ( <i>Neochmia phaeton</i> )	11-12
Red-browed Finch ( <i>Egitha temporalis</i> )	13
Gouldian Finch ( <i>Poephila gouldiae</i> )	15
Black-throated Grass-Finch ( <i>P. cincta</i> )	12
Spotted-sided Finch ( <i>Steganopleura guttata</i> )	12
Chestnut-eared Finch ( <i>Faniopygia castanotis</i> )	11
Bichenø Finch ( <i>Stictoptera bichenovii</i> )	11
Plum-head Finch ( <i>Idemosyne modesta</i> )	12
Satin Bower-Bird ( <i>Ptilonorhynchus violaceus</i> )	21
Blue-bellied Lorikeet ( <i>Trichoglossus nova-hollandiae</i> )	23-26
Cockatoo-Parrakeet ( <i>Calopsittacus nova-hollandiae</i> )	21
Black-tailed Parrakeet ( <i>Polytelis melanura</i> )	28
Red-winged Lory ( <i>Ptilotes erythropterus</i> )	24
Pennant Parrakeet ( <i>Platycercus pennantii</i> )	20
Pale-headed Parrakeet ( <i>P. pallidiceps</i> )	21
Rosella Parrakeet ( <i>P. eximius</i> )	21-24
Barnard Parrakeet ( <i>Barnardius barnardi</i> )	21
Many-coloured Parrakeet ( <i>Psephotus multicolor</i> )	18
Red-rumped Parrakeet ( <i>P. haematonotus</i> )	22
Bourke Grass-Parrakeet ( <i>Neophema bourkei</i> )	17-22
Blue-banded Parrakeet ( <i>N. venusta</i> )	19
Turquoise Parrakeet ( <i>N. ?</i> )	20-22
Warbling Grass-Parrakeet ( <i>Melopsitticus undulatus</i> )	18-20
Little Turtle-Dove ( <i>Geopelia cuneata</i> )	12
Brush Bronze-wing ( <i>Phaps elegans</i> )	15-18
Crested Bronze-wing ( <i>Ocyphaps lophotes</i> )	19
Zosterops	9-10
Cockatoos	21

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AUSTRALIAN BIRDS IN ITALY.—The Rev. H. D. Astley, M.A., M.B.O.U., occupies a coign of vantage in his home at Ligure, in the Italian Riviera, that may well excite the envy of his less fortunately situated fellow-aviculturists abroad, and there is a touch of pardonable pride in his account, in *The Avicultural Magazine* for April, of a fine haul which he made for his aviaries on the 9th March last. On that day a vessel arrived at Genoa with a consignment of Australian birds, and Mr. Astley obtained four Bourke Grass-Parrakeets (*Neophema bourkei*), a pair of Many-

coloured Parrakeets (*Psephotus multicolor*), a pair each of the Painted (*Emblema picta*), Yellow-rumped (*Munia flaviprymna*), and Crimson (*Neochmia phacton*) Finches, and a Gamboge-headed Gouldian Grass-Finch (*Poephila gouldiae*). The Yellow-rumped Finches were quite new to Mr. Astley, so he gave a full description of them. An editorial note mentions that eleven of these rare Finches had just reached a London dealer, of which four had ultimately gone to the Zoo. It is to be hoped Mr. Astley's birds do well. They will not find themselves alone as captives in the strange land, for in another paper in the same number Mr. Astley, describing one of his outdoor aviaries, mentions as among its occupants "Ruficauda" Finches, Blue-winged Grass-Parrakeets, Diamond Sparrows, Bronze-wings, and Diamond and Peaceful Doves. Mr. Astley has much to tell of the Doves, evidently his favourites. "A pair of Diamond Doves in perfect condition, sitting cooing and preening their feathers in an orange tree, with the golden fruit hanging over their small grey heads, and the brilliant blue of the Mediterranean in the background, is worth seeing." One wonders if the tiny strangers are ever homesick for the south. Probably nostalgia is a human ill that birds know nothing of, and yet—it is a far cry from the Riverina to the Riviera.

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OREOSCOPUS (SERICORNIS) GUTTURALIS.—In *The Proc. Roy. Soc., Queensland*, vol. vi., p. 244 (1889), Mr. C. W. De Vis described a new bird from North-Eastern Queensland as *Sericornis gutturalis*. On the discovery of its nest and eggs recently, and a further examination of skins, Mr. A. J. North, Ornithologist Australian Museum, has assigned the species a new genera—namely, *Oreoscopus*—and the very distinctive vernacular name "Fern-Wren." The Trustees of the Australian Museum received two nests with sets of eggs of this bird taken by Mr. H. Elgner, the eggs being widely different from those of the true *Sericornis*. A description of the nests and eggs appears in *The Agricultural Gazette of New South Wales*, March (1905), p. 247. The covered nest (of which a photo. is given) appears very beautiful, composed of fresh green mosses, while the eggs are pure white entirely in one set, but in the other there were numerous faint purplish-red dots and spots on the surfaces. Mr. North extracts the following from Mr. Elgner's interesting field notes:—

"The first nest of *Sericornis gutturalis* I found was in November, 1903. In the following month I found another, built in the side of a gully, near the Upper Russell River, with an egg in it. The following day I flushed the bird from the nest, but only caught a glimpse of it as it rapidly passed over the fallen leaves lying on the ground. The nest now contained two eggs. The nest was visited on four occasions during the two succeeding days, and then it began to rain, continuing without a break for two more days. On visiting it the following morning, as I anticipated, part of the nest had been washed away with the water, and the eggs were lying broken on the clay below. On the 10th August, 1904, when on Black Mountain, I found another nest, con-

taining two fresh eggs, but did not see any bird about it. This nest was built in a similar position to the previous ones, being partially built in a hole in an almost perpendicular bank on the side of a gully overgrown with small ferns and mosses, rendering the nest nearly invisible, although the gully was close to a track. Returning to my camp, I provided myself with a butterfly net, and, as soon as it was quite dark, without boots, and carefully shading a candle-light, again visited the nest. Quickly placing my net over it, I caught the bird just as it was flying out, and took the nest and eggs. In the early part of October I found two more nests, with two eggs in each, which had been abandoned by the birds, as the yolks were dried up in them and adhering to the shell. The eggs in these nests were not pure white, as those previously found, but had a few small spots on the thicker end, so I did not know whether they belonged to the same bird or not. A few days later I was on the Macalister Range, when, coming down a gully, I saw a little bird with some moss in its bill run on to a piece of dried wood. Looking with my field glasses, I saw it was *Scricornis gutturalis*. I went lower down the gully and up on the bank, and sat down among some bushes. The bird flew over to the opposite side of the creek, then back again, hopping within 4 feet of me. I kept very quiet. Then it went behind me, and flew over again to the other side of the creek. There was a very steep place where it disappeared. I watched it return four times into the gully, and gather moss off the rocks and go back to the same place, where later on I discovered the nest. Marking the spot, I returned a week later, on the 21st October, 1904, and found the bird sitting on two fresh eggs, which, together with the nest, I took. The eggs in this nest were also speckled on the thicker end."

## Correspondence.

NATIVE NAMES OF BIRDS.

To the Editors of "The Emu."

SIRS.—We are neglecting a duty we owe to posterity by not collecting the aboriginal names of our birds. The aborigines are fast disappearing, and with them goes the original nomenclature of our avi-fauna. Were native names and other native knowledge of our birds collected and published we would no doubt find, on systematically tabulating them, that there was a connection between some species which so far has been hidden from systematists, and especially from field workers, but which was understood by the aboriginal children of nature, whose life was so closely bound up with the habits of our birds. Some of our field-workers have recorded that they had discredited information given them in the field by our aborigines, but on investigation had found the blacks' information correct. With pleasure I note that some of our field-workers, members of the A.O.U., have given native names when writing. Probably all the members of the A.O.U. would assist as far as they can in this patriotic and probably useful duty ere it be too late.—Yours, &c.,

Melbourne, 8/6/05.

A. H. E. MATTINGLEY.

[In connection with this subject reference should be made to



vol. i., p. 112 *et seq.*, wherein Mrs. Langloh-Parker gives many native names for birds. The various articles that Mr. Milligan has contributed to *The Emu* should also be consulted; some others also. But there are so many aboriginal dialects, in most of which the name of each bird varies, that the names given possess no meaning save to those in the immediate locality. It would be worth the while of someone who possesses the requisite material and knowledge to compile a list of the aboriginal names of birds, tabulated according to the various dialects. A great deal of information is available in such works as those of the lamented Rev. J. W. Draper, R. Brough Smyth, and the journals of the various explorers. The memorable records which Dr. Howitt has made would perhaps be better than all—certainly as far as Victoria is concerned.—H.K.]

## Review.

### THE THREE NAUMANNS.

To hand is a reprint of Dr. Paul Leverkühn's contribution to Naumann's "Natural History of the Birds of Central Europe." The original work of Johann Andreas Naumann appeared in 4 volumes and 8 supplements, 1765-1817; his son Johann Friedrich brought out a second edition, with much added matter, in 13 volumes, 1820-1844; and the present edition, which was published last year in 12 volumes, under the editorship of Dr. Henricke (F. É. Köhler, Gera-Untermhaus) is the third. Of the many collaborators in the letterpress, Dr. Leverkühn, of Sofia, Bulgaria, was entrusted with the task of writing the story of the life and work of these three German ornithologists—Johann Andreas Naumann (1744-1826) and his sons, Johann Friedrich (1780-1857) and Carl Andreas (1786-1856).

Dr. Leverkühn, in addition to much excellent biographical material, reproduces the elder Naumann's preface and conclusion, and J. F. Naumann's introduction to the second edition and preface to its several parts, with eight of his letters to contemporaries. It is from these pieces of autobiography that we get the clearest portrait of the Naumanns. They came of a stock of small farmers and bird-catchers, settled for centuries at Ziebigk, in the principality of Anhalt-Cöthen, a district then very rich in birds. The characters of father and son were singularly alike. Each was diligent in observation and faithful in the record of what he saw; upon each, too, came in his childhood the strong, enthusiastic love of nature, and remained till death. They had but small education. The father says of himself—"I am more practised in the construction of snares than of sentences, and have ever been an explorer of nature rather than of books." Johann Friedrich Naumann, however, read everything to be had pertaining to ornithology, and to his father's powers of observation he added a talent for drawing,

painting, and copper-engraving—a splendid equipment, truly, for an ornithologist, and of which he made full use. The Naumanns were observers pure and simple, not systematists, preferring the field to the study, but they did for Germany what Gould did for Australia, and, like his, their work remains the standard.

Carl Andreas Naumann, the younger son, was a forester in the service of the Duke of Anhalt-Cöthen. He wrote nothing himself, but from his wide experience in the field was able greatly to help his brother in the preparation of the second edition.

Australians will learn with interest that Gould once visited J. F. Naumann at the latter's home, and that the name of Baron von Mueller appears as one of the eleven signatories to the first appeal for funds to erect the Naumann memorial, which was completed in 1880. And of especial interest to Australian ornithologists, too, is the record by J. F. Naumann of the Tropic-Bird (*Phaethon*) having twice been seen on Heligoland (1842) and of the shooting of a Sooty Tern (*Sterna fuliginosa*) near Magdeburg in 1844.

The bibliographic part of Dr. Leverkühn's work has been done with characteristic German thoroughness, and should be invaluable for reference. Each volume of each work of the Naumanns is separately dealt with. The reprint also contains eight special plates and a genealogical tree of the Naumann family.

### About Members.

Mr. H. Kendall, on account of pressure of office work, has asked to be relieved of his duties as one of the honorary editors of *The Emu*. While reluctantly complying with his request, and thanking him for his past valuable assistance, the Council of the A.O.U. hope to retain Mr. Kendall's services as an "advisory" editor.

At the general meeting of the B.O.U., held in London 24th May, Mr. John Macoun, M.A., F.R.S.C., Canada, and Mr. A. D. Millar, Natal, were elected Colonial Members, while Mr. Harry C. Oberholser, Washington, D.C., was elected a Foreign Member, and Dr. Paul Leverkühn, Bulgaria, an Ordinary Member.

MR. A. G. Campbell, Melbourne, is compiling a "Key" which he claims will prove serviceable to beginners and others in aiding them to easily identify any species of Australian bird. The need of some such ready help is obvious, and the system of dichotomy which was first applied by the *savant* Lamarck to plants has been found most suitable for birds. The system, which could be also applied to eggs or to any forms of the natural world, is not only easily mastered but possesses a fascination of its own. When Mr. Campbell has compiled the "Key," it is probable that the Council of the A.O.U., in the interests of its members, and as an aid to popularise ornithology, will publish the "Key."

## Notes and Notices.

THE RABBIT PEST IN AUSTRALIA: Its Cause and Its Cure. By W. Rodier. The Council of the A.O.U. have received this pamphlet from the author. This system of destroying the pest certainly commends itself to bird-lovers, because no birds are destroyed by the method, as is the case with the various poison formulæ.

MR. J. A. Kershaw, F.E.S., Curator National Museum, Melbourne, writing on behalf of that institution, states:—"Any birds or mammals which show any variation from the usual type are always welcome additions. We are particularly in want of albino forms of all kinds. I would esteem it a favour if you let our wants be known among your country friends and others."

BIRDS OF ITALY.—To hand from the publishers (Rebeschini di Turati and Co., Milan) is the prospectus of a work entitled "The Birds of Italy, Described Popularly and Figured," by Professor G. Martorelli. It is to be published in parts, and will contain about 500 pages, with 200 illustrations (photo. and water-colour). The British Museum classification is to be adopted.

A REMARKABLE PARROT.—At the Prahran poultry and dog show, Mrs. Hoffner exhibited a handsome and lively variety of the Pennant or Crimson Parrakeet (*Platycercus elegans*). The general colour is bright scarlet relieved with white, the white seemingly taking the place of the blue parts in the normal coloured bird—cheeks, shoulders, wing coverts, &c. The eyes are ruby. It was found in Gippsland, thrown out of a nest, and was taken home and reared by the finder.

THE Nature Study Exhibition held at Geelong last Easter was a decided success, and a departure in the right direction. It is hoped that similar shows will follow, at not too distant intervals, in other provincial centres. The exhibitors in ornithology at Geelong were Mr. W. Shaw (gold medal and special prize), Mr. J. Hammerton, jun. (silver medal), Mr. J. F. Mulder (special prize for best local collection), Mr. Neil Campbell, besides a loan collection from the Department of the Government Entomologist. With the exception of the Government collection, none, or very few, of the specimens were named, nor were habitats given. From an educational point of view these omissions were detrimental, notwithstanding many of the species were life-like and artistically set up.

THE second monthly meeting of the Bird Observers' Club was held at the residence of Mr. D. Le Souëf, Royal Park, on the evening of 25th April last, the host occupying the chair. Dr. Bryant, Messrs. G. E. Shepherd, A. J. Davidson, J. M. Thomson, and E. J. Christian were elected members. The following papers and notes were read and discussed:—"Shore Birds," by Dr. Bryant; "Young White-bearded Honey-eaters," by Mr. Donald

Macdonald; "An Autumn Ramble," by Mr. A. J. Campbell; and "Autumn Notes," by Mr. A. G. Campbell; while Mr. F. E. Howe exhibited a male Red-capped Robin (*Petroica goodenovii*) with a partially scarlet throat, thus showing affinity to *P. ramsayi*, and Mr. Le Souëf exhibited and explained many fine series of his oological specimens.

INTERESTING returns of "birds striking the light" continue to come in from the lighthouse observers. Mr. D. Le Souëf is tabulating these returns, which so far chiefly relate to sea-birds. But Mr. Geo. Johnson's last report from Cape Wickham, King Id., mentions several small land-birds—Cuckoo, Fantails, Robins, &c. He also has been the means of recording a new bird for the Tasmanian "region"—namely, the White-browed Wood-Swallow (*Artamus superciliosus*), which appeared in numbers for the first time on the island about the 9th April last. In Mr. Johnson's subsequent notes it will be interesting to learn how long these migratory Wood-Swallows remained—not long, possibly. Probably the birds had recently flocked on the adjacent mainland previous to a northern move, and making a southern wheel, touched King Island. One of the Wood-Swallows shot by Mr. Johnson accompanied his schedule.

## An Autumn Ramble.

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

BIRD observations are usually made during the spring and summer months, in this country at least, when bird-life is more plentiful and interesting.

In this short sketch I propose to mention 34 species of birds identified in autumn (6th May, 1905) during one day's outing on the Mornington Peninsula, which divides the waters of Port Phillip from those of Western Port.

The locality may be generally described as open forest country, consisting of swamp or grey gums (*Eucalyptus*), fine-leaved peppermint gums and manna gums, mixed with *Casuarina*, *Exocarpus*, blackwood, &c., with a ground scrub of *Leptospermum*, *Melaleuca*, &c.

My bedroom window being partly open, before dawn I can hear the "Boobook" call of the little Brown Owl. The spring of day is heralded by the laughter-like notes of a family of Great Brown Kingfishers camped in a tree about 150 yards away. Then follow the cheerful carols of Magpies. When it is broad daylight a familiar Black-and-White Fantail calls at my window as if to say "Good morning, sir." Afterwards I detect the voices of Wattle-Birds, Spotted Pardalote, Magpie-Lark, Grey Thrush (harsh notes, peculiar to winter months), and Noisy Miners. I can hear the "quick-quick, quick-quick" notes of Rosella Parrakeets passing by

the house, and the screeches of numerous Lorikeets. And on opening wide my window, I noticed a pair of Brown Flycatchers on the garden fence, and some Babblers hopping over the ground among the fruit trees about 50 paces away. So much for "feathered friends" seen or heard before I break my fast. After breakfast, with a sympathetic companion,\* I ramble into a bush paddock, where Lorikeets are clamorous everywhere. The cause is not far to seek. The swamp gums, which have not flowered here for years, are now full of bloom, surcharging the air with a mawkish-like aroma. These nectar-laden blossoms have attracted four kinds of the honey-eating Parrots, all species sometimes seen feasting in the same tree. The most numerous is the Little Lorikeet, which is seen in strings at times upon the tops of dry branches. Then, in point of numbers, come the Musk Lorikeet. Some Switt-flying Lorikeets are identified by their longer-pointed tails, and when on the wing by brilliant scarlet under-shoulder parts, and by their chattering-like notes. The fourth species is the little Purple-crowned Lorikeet, seen in pairs, but few and far between.

Passing an old cultivation paddock a single Spur-winged Plover is disturbed with protesting cries, and male Flame-breasted Robins are seen perched upon stumps or posts. In an acacia hedge is a Scrub-Wren (probably *Scricornis osculans*), with noisy notes, a contrast with the merry songs of a Shafted Fantail and a Yellow-faced Honey-eater. In a more thickly timbered patch a pair of Brush Wattle-Birds is observed, also White-eared and White-plumed Honey-eaters, in addition to a beautiful male White-throated Thickhead, some Striated Tits, and a Butcher-Bird. Here, too, we capture a female Rosella, fluttering along the ground and through bushes, endeavouring to escape us. We examine her with much curiosity. She evidently is suffering from moult troubles, and, having shed the primaries of both wings, is unable to fly. In the tail there remains a feather or two, but the rest of the body is fairly clothed, though somewhat soiled in travelling over the ground. This bird apparently is no exception, because my companion informs me that during his walks afield this season he has seen several Rosellas similarly feathered, incapable of flight. I must not omit to mention an exceedingly handsome Great Brown Kingfisher, which we observed closely—an old male, no doubt, judging by the splendid patch of blue on his wing coverts and the rich brownish markings of the upper tail coverts.

In the afternoon we visit a messmate (gum) forest, brightened with early-flowering pink epacris, and through which runs a tea-tree creek. Here we add to our list Orange-winged Sittella, Scarlet-breasted Robin, Yellow-tailed Tit, Red-browed Finch, Little Field-Wren (*Chthonicola*), Ground-Thrush (*Geocichla*—a single example), and on returning home the familiar Swallow, several of which will, no doubt, remain in the district during the winter. We are glad to notice how plentiful the large and useful Babbler (*Pomatorhinus*)

\* Mr. G. E. Shepherd, of Somerville.

is becoming. A flock of 10 or 12 goes hopping across the road before us. Their cat-like call is very remarkable. An orchardist one day thought that another cry of these birds sounded like "Every three yards, every three yards." He was planting fruit-trees at the time.

At the close of day I waited near a camping place of Laughing Jackasses (Great Brown Kingfishers), where I was much entertained watching the home-coming of the family, notwithstanding the crowds of stinging mosquitoes. At dusk, or 40 minutes after sundown, two birds coming from opposite directions sailed into the tree, and after a hearty laugh moved to a particular perch. Soon afterwards three others came, one by one, each in turn receiving a noisy welcome, ending in chuckling notes of seeming satisfaction and contentment. Convivial choruses from other families could be heard in the distance in different directions. At last darkness was complete, and all had shut down for the night.

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## Australasian Ornithologists' Union.

ROUGH MINUTES, 30TH MEETING A.O.U. COUNCIL, HELD AT DR.  
C. RYAN'S, ON WEDNESDAY, THE 21ST JUNE, 1905.

Correspondence was received from Professor J. A. Allen, thanking the Council for electing him an honorary member of A.O.U. Mr. P. Peir, of Sydney, also wrote, stating that the cost price of the official badge of the A.O.U.—viz., an Emu carved on Emu-egg shell, and designed by him—would be 3s. for the carved shell, and if set in an 9-carat gold pendant, suitable for wearing on the watch chain, or on the lapel of the coat, or as a brooch, it would cost 8s. complete. These prices were considered by the Council as remarkably reasonable.

Communications were received from Mr. W. Rodier, of Tambura Station, N.S.W., and the *Review of Reviews*, New York.

Mr. R. Henry, of Pigeon Island, Dusky Sound, New Zealand, also wrote, stating that he had no objection to his article "Bird Sanctuaries of New Zealand," which appeared in *The Emu*, being republished in the Annual Report of the Smithsonian Institute for 1904, in conjunction with the article by R. A. Vivian entitled "Some Bird-Life of British Papua," which the Institute also wished to republish.

Auditors for the current year were elected, viz. :—M. Symonds Clark and Edwin Ashby, as general auditors, and as local auditors C. L. Barrett and E. D'Ombraim.

It was decided that the next Annual Congress, which is to be held at Adelaide, should take place about the middle of October, and that a "working field trip" would be taken to Kangaroo Island, since many interesting features are to be found amongst

its avifauna, and that an official visit could then be paid to the lighthouse there, which regularly forwards reports on the migratory birds that strike the light.

The hon. sec. was instructed to write to the Hon. the Premiers of Tasmania and New Zealand, and also Sir Joseph Ward, of Wellington, asking them to support the motion of Mr. Walter Lionel Rothschild which was brought before the International Ornithologists' Congress now being held in London, that the Penguins on Macquarie and other islands south of New Zealand be protected, as was cited in a recent cablegram.

Mr. H. Kendall was unanimously elected advisory editor of *The Emu*.

The question of the next coloured plate was dealt with, and it was suggested that Dr. Sharpe be written to and asked to advise the Council as to what specimens were the more important for figuring in *The Emu*, as Dr. Sharpe has several unfigured skins of Australasian birds in his possession. It would also obviate sending skins to England, and so facilitate the work and reduce the expenditure.

The advisability of instituting an inquiry column in *The Emu* was dealt with, and it was decided to empower the hon. editors to introduce this new feature. It was also mentioned that the permanent requirements of "working" ornithologists relating to Australasian avifauna, such as the discovery of the unknown nests and eggs of known birds, be published also.

A portion of a dichotomous key to the birds of Australia, that Mr. A. G. Campbell was at present working out, was exhibited, and it was suggested that the key be issued as a supplement to *The Emu*. After some discussion it was decided to deal definitely with the matter when the key was complete, so that there would be an indication of the cost of its production. It was also inferentially mentioned that a dichotomous key on "Oology" should accompany the one on birds.

Mr. C. L. Barrett, on the retirement of Mr. A. G. Campbell, was elected unanimously "press correspondent."

Reports of the birds striking the different lighthouses were read by Mr. D. Le Souëf, and some important observations were recorded, especially from Cape Wickham.

### Inquiry Column.

It is thought that a column of inquiry for matters pertaining to ornithology would be useful to many members, especially to those residing in the country, not to mention the far bush. The Council of the A.O.U., therefore, through the editors, invite questions about bird subjects, such as identification, &c., which may perplex any member. The replies, if possible, will be made through *The Emu*.

## Publications Received

*Auk, The*, XXII., Nos. 1 and 2, Jan.-April, 1905.

*Academy of Natural Sciences*, Proceedings, LVI., Part II., April to August.

*Agricultural Magazine, The*, N.S., Nos. 4-6, Feb.-April, 1905.

*Birds of North and Middle America, The* (Ridgway), Parts I.-III., 1901-2 and 1904.

*Bird-Lore*, VII., Nos. 1 and 2, Jan.-Feb. and March-April, 1905.

*Biological Survey*, United States Department of Agriculture. Recommendations of State Game Commissioners and Wardens for 1905.

*Condor, The*, VII., Nos. 1 and 2, 1905.

*Geelong Naturalist, The*, Second Series, I., No. 4, Dec., 1904.

*Linnean Society of N.S.W.*, Proceedings, Vol. XXIX., Parts 1-4, 1904.

*Leverkühn*, Paul. (1) Biographisches über die drei Naumanns und Bibliographisches über ihre Werke. (Sonderabdruck aus Naumanns Naturgeschichte der Vögel Mitteleuropas, Band I. F. E. Köhler, Gera-Untermhaus, 1904.) (2) Zaun-Könignester von Hummeln besetzt. (Orn. Monatsch., vol. xxix., No. 12, S. 501-502.) (3) Pischingers Beiträge zur Antiquarischen Ornithologie. (Ibid., S. 503-504.) (4) Ein Merkwürdiger Kolkraabenhorst. (Ibid., vol. xxx., S. 118-121.)

*Martorelli*, Giacinto. Gli Uccelli d'Italia Descritti Popolarmente e Figurati. (Programma Rebeschini di Turati, Milano.)

*Smithsonian Institute*, Annual Reports, 1902-3.

*Victorian Naturalist, The*, XXI., Nos. 11 and 12, March-April, 1905.

*Zoologist, The*, Fourth Series, IX., Nos. 98, 99, and 100, Feb., March, April, 1905.







Home of the Lyre-bird: On the Far Upper Yarra.

# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. V.]

2ND OCTOBER, 1905.

[PART 2.

## Notes on the Victoria Lyre-Bird (*Menura victoriae*).

BY A. E. KITSON, F.G.S., MELBOURNE.

### DISTRIBUTION AND DISPERSION OF THE LYRE-BIRD.

THE Victorian Lyre-Birds are restricted to the densely timbered, moist, hilly, and mountainous parts of eastern Victoria, for they must have abundance of moisture, and food consisting of insects, grubs, worms, &c. The Melbourne to Sydney railway may be taken as the approximate western limit of these birds. They have not been found to the west of that line, nor even nearly up to it in many parts. The reason apparently is that no densely timbered and scrubby humid ranges, with permanent creeks in them, occur to the west of this line on the northern side of the Main Divide, for neither Futter's Range nor the Mokoan Range near Benalla possesses these characteristics. The Main Divide itself, where the railway crosses it at Kilmore Junction, at an altitude of 1,145 feet, is rather low, and is not—apparently never was—densely scrubbed. Again, although eminently suitable country for these birds is comprised by the Macedon Ranges and those in the Blackwood district, near and on the Main Divide, also by the Otway Ranges, no Lyre-Birds are found there. In the case of the last, the reason is undoubtedly its isolation. It is completely cut off from the other hilly and mountainous districts of Victoria by the great volcanic plains of the Western District, which would form an effectual barrier to the dispersion of the Lyre-Bird southwards, even if it were present on the Main Divide to the north. The bird is so shy that, unless abundant cover be quite close at hand, it will not, under ordinary circumstances, venture into the open forest country, much less cross wide tracts devoid of arboreal vegetation. It is not so obvious why the Lyre-Bird is not present in the thickly timbered and scrubby country of the Macedon Ranges, but apparently this also is due to its comparative isolation. On the east it is separated by a wide dissected volcanic plain, forming a natural barrier. The only practicable bridge of dispersion exists in the Main Divide itself, which from Wandong on the railway takes a general north-westerly course to Mt. William, thence south-westerly and southerly to Mt. Macedon. About Mt. William itself there was, in its original state, a small area which might

have been suitable for Lyre-Birds, but on the portions between Wandong and Macedon the want of sufficient moisture and scrub is perhaps the reason of their absence. The birds seem to have spread over south-eastern Australia from New Guinea by following through Queensland and New South Wales the mountains that form the watershed between the Darling-Murrumbidgee basin and the Pacific Ocean; and this within comparatively recent time, considered from a geological point of view.

It is a matter for wonder that in suitable country Lyre-Birds have existed in such numbers as they have done. The native carnivorous fauna destructive to them comprise the dingo or wild dog (*Canis dingo*), the "tiger cat" (*Dasyurus maculatus*), and the "native cat" (*D. viverrinus*). These animals, especially the two first—which are much less numerous than the "native cats"—frequent Lyre-Bird country. These birds build their nests in spots usually accessible to dingoes, and easily so to the climbing "cats." They have almost invariably only one young one a year, and yet in most of Gippsland and the North-Eastern District Lyre-Birds exist in much greater numbers than many of the other larger birds, which nest in much less dangerous situations, such as the Grey Magpie, King Lory, Wonga-Wonga and Bronze-winged Pigeons, Laughing Jackass, and Black Cockatoo. The Lyre-Bird is a day bird, and roosts in trees at night, so, except at nesting time, it is practically safe from attack. It is a strong, active bird, and could, even if attacked by a "cat" in a tree, either free itself or drag the "cat" to the ground in its first struggle. But it is comparatively helpless when in the nest, and certainly the young are completely so. One fact, however, aids in its protection. The nest is usually not easily seen, especially if the female bird is inside with her tail raised over her head, as is her wont, thus nearly filling up the entrance and breaking the noticeable black cavity of the empty nest.

Near the source of the King River I have seen the birds going to roost in tall green trees. They cannot fly upwards like an ordinary bird, but rather partially jump upwards in a slanting direction, with their outspread wings aiding them by soaring, not flapping. To get into these tall young trees, ranging up to nearly 100 feet in height, they went up by stages, taking advantage of short and long tree ferns and the branches of smaller trees.

#### DESTINY OF THE LYRE-BIRD.

But the days of the Lyre-Bird are numbered, unless it develop the habit of nesting in trees\* or spots inaccessible to its far more dangerous enemy, an introduced one, the European fox. Scattered feathers and occasional feet are frequently met with in some parts of the country, and attest the depredations of the fox, which has now spread over nearly the whole, if not the whole, of the State.

\* Reference to Plate VI. will show that Lyre-Birds occasionally build in trees.—Eds.



Nests of Lyre-Birds in Trees.



and has, moreover, developed the faculty of ascending slightly leaning trees.

As regards South Gippsland the Lyre-Bird is doomed to extinction, and that by the agency of man. The mass of billy country between the valleys of the Latrobe on the north; the Tarago, Lang Lang, and the Bass on the West; the Powlett and Tarwin and the narrow strip between Foster and Merriman Creek on the south and south-east, was a large tract, covered with an extremely dense vegetation and in a continuously moist or wet state before settlement took place. It was united to the main mass of the mountain system of eastern Victoria by a narrow elevated tract of volcanic and similarly timbered country between Warragul and Longwarry. In every gully and on every spur the lovely notes of the Lyre-Bird could be heard, and evidence of its occupation could be seen on every hand. Thousands of these birds must have sported about this country, making the otherwise rather silent forest a huge natural concert hall. Now, alas! the march of settlement, with its breech-loaders, forest spoliation, and bush fires, has brought about a sad change from a naturalist's point of view. With the disappearance of the scrub goes the Lyre-Bird, and as the country gets cleared from various sides so patches only of scrubby country are left. These become the temporary home of such of the outcasts as have escaped the gun, the clearing, and the fire, till they, in their turn, become felled and burnt, when the Lyre-Birds disappear.

#### NEST, EGG AND YOUNG.

During my geological survey of the Victorian coalfields area in South Gippsland in the year 1900 I was camped on the Foster River near Jumbunna, on the edge of a belt of natural forest of an extremely dense character. This scrub was the home of scores of Lyre-Birds, whose lovely notes could be heard all through the day.

Several nests of these birds were found, and as many observations made concerning the birds and their habits as time and opportunity permitted. One nest was situated in the side of one of the short, deep channels ("blind creeks") that drained the swampy portion of the river flat. As is customary in South Gippsland, the timber had been taken "in the face"—*i.e.*, all the scrub and trees up to, say, 4 feet 6 inches in diameter had been felled, but as they had not then been burnt, they lay in hopeless confusion, forming a tangled mass of logs, branches, and scrub, through which young scrub was growing. It was, therefore, an awkward place for stock, or even human beings, to get into—a fact that some of the birds had apparently recognized by building their nests in it. Across the river lay the natural forest forming the feeding and sporting ground of the birds, and containing some nests also. I found the nest in question one morning by noticing the female bird fly, or rather float, noiselessly away from the place on my approach. This is a common practice with the Lyre-Bird. A young bird, unfeathered save for tufts of down on its crown and upper back,

and a few young feathers just breaking forth on the crown, was in the nest. It screeched so vigorously on being disturbed that the female bird quickly appeared, making meanwhile a semi-clucking noise, somewhat similar to that of a domestic hen calling her chicks. Whenever the little one gave its whistling screech the mother made this noise, and also gave vent to her own quaintly melodious notes, sounding like "Koo-wuk', koo-wuk', koo-wow'," with a growl-like roll on the *wow*, and "Qua-ack', qua-ack'," somewhat like the guttural of the common opossum. On calming down after the young bird stopped screeching she imitated various birds,\* principally the Tits, Scrub-Wrens (*Scricornis*), Coachwhip-Bird (*Psophodes crepitans*), King Lory (*Aprosmictus cyanopygius*), Magpie (*Gymnorhina leuconota*), Grey Magpie (*Strepera cuneicaudata*), Laughing Jackass (*Dacelo gigas*), Black Cockatoo (*Calyptorhynchus junceus*), Butcher-Bird (*Craclius destructor*), Sparrowhawk (*Accipiter cirrhocephalus*), &c.—principally the first three. She then walked leisurely down the sloping log, stopping every now and then to scratch it—simply through force of habit, for it was quite dry and sound—and then jumped on to the ground and resumed her scratching. All this time she was giving a refined rendering of the liquid notes of the common Magpie.

The place was a very unsuitable one for the camera, and, being alone, there was difficulty in getting the photo of the adult bird (see Plate VII.) She was very restless, and as a time exposure was necessary, I was compelled to focus the camera on a certain part of the log where she stayed for a second or two while walking down it. Then, as I could get no stick long enough to touch the young one from my post at the camera, I collected pieces of mud and earth, and threw bits of these into the nest. Whenever one hit the little bird a screech followed, and the mother was on the log like a flash, but keenly alert and ready to float into the scrub at the least sign of danger.

On one occasion (22nd September, 1900), when setting up the camera opposite the nest, I heard a slight sound, and, looking up, found the bird on the log within 2 feet of my head. I had not touched the young one, so it had not screeched, and the mother had, therefore, not betrayed herself sooner. All the while I was setting up the camera she moved about the log within a few feet of me, occasionally putting her expanded tail over her head, and quietly warbling—an alert, observant, fearless spectator. Now and then the young bird gave its whistling screech, when the old one evinced great distress and moved to a position that gave her a view of the nest, though she never went near it all the time. Whenever I stooped or sat down on the ground she got suspicious and hopped round till seeing me, then walked up quite close to see what was being done. Of my whistling she took very little notice, of talking none at all, but started at once at a gruff noise like coughing.

\* This is a very important note. Hitherto it was believed that the male Lyre-Bird only mimicked.—EDS.



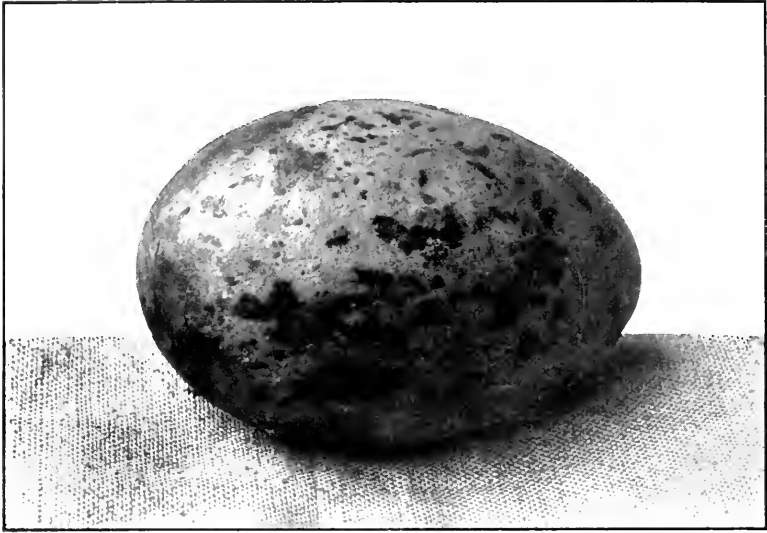


Lyre-Bird (female).

FROM A PHOTO. BY A. E. KITSON







Egg of Lyre-Bird (natural size).

FROM A PHOTO BY A. J. CAMPBELL.



Young (in down) of Lyre-Bird.

FROM A PHOTO. BY A. E. KITSON.

One of her most graceful movements was walking along the swaying frond of a tree-fern. As the frond bent under her weight she gradually reversed her position till she was hanging head downwards, suspended by her claws, and quietly warbling the while. This bird was the most sensible of any of the kind that I have seen. She seemed to realize at once that I had no intention of hurting the young one, and though evincing every sign of great distress while her offspring was screeching, became quite reassured of its safety when the screeches ceased.

The bird frequently walked down the log while I was standing at the nest with my head within 2 feet of her. Once I touched her feet with my hand, and I think with a little time and patience I could have caught her. Several times I made a grab at her leg, but she only jumped and floated away to another log, without evincing any signs of fear. Again, to test her timidity, I shouted, waved my arms, and threw little sticks at her without frightening her from her position, and even when one stick hit her on the head she simply floated to another log and resumed her observations.

The entrance to the nest can be seen just on the right of the log under the tail of the bird and just to the left of the extremity of the blackbutt spray with large leaves.

The picture of the young bird (Plate VIII.) shows it resting in my hat, surrounded with sprigs of tree-fern (*Alsophila australis*), dogwood (*Cassinia aculeata*), blackbutt (*Eucalyptus pilularis*), musk (*Aster argophyllus*) and laurel (*Pittosporum unilulatum*). It was very frightened when first taken out of the nest, but soon rested quite contentedly in the hat while being photographed.

When in the nest it commenced to screech immediately anything appeared in the entrance, and thrust itself back as far as it could, meanwhile keeping almost on its back, with its powerful feet pushed out in front, and screeching. As it grew older it sometimes pecked at my hand when thrust into the nest, and always screeched. This, however, was never long sustained, except on movement of the hand, and it remained quite still if the hand were still.

I watched it carefully till it was nearly fledged, but one day I heard the distress signal several times in rapid succession. On reaching the place I found the poor creature dead in the nest. It had suffered no apparent injury, there were no signs of damage to the nest, or of any struggle, and the only conclusion I could come to was that it had been bitten by a tiger snake (*Hoplocephalus curius*). The nest was in the side of the gully, about 5 feet from the bottom, and easily accessible to animals and reptiles. The snake had, I think, put its head into the nest, been pecked by the bird, and after at once biting it had withdrawn and disappeared. I made careful search to confirm this view, but could not, as the place afforded no chance of seeing a snake-track of any kind. Had a fox killed it the bird would undoubtedly have been dragged out of the nest. The snake, as every bushman knows, is of a very enterprising nature, and particularly partial to exploring nests of birds, whether on the

ground, or in trees and scrub. I have nearly tramped on one crawling along a scrub-suspended fallen tree, at a height of 10 feet from the ground, the snake being there probably with the dual view of getting direct sunlight and young birds, and I for less laborious and quicker progress than was practicable in the tangled vegetation on the ground.

In the case of another nest near, I found there was no sign of any old bird until the young one screeched on being touched. Then like a flash the female bird was on the spot, uttering notes somewhat similar to those of a "chucking hen." On seeing me she flew first into a tree-fern, watching intently meanwhile, then on to the ground and scratched away, gradually working up almost to within kicking distance. All this time she quietly imitated three or four notes of the Magpie and those of a few other birds. When any movement was made she jumped or ran away a few yards and resumed her quest for grubs. When the young one screeched rapidly several times in succession, the mother, after giving her answering call, "Koo-wuk', koo-wuk'," made a noise like a woman in hysteria. She calmed down when the young one stopped its noise, and with a grating, purring noise floated down to the ground and resumed scratching.

The young one, when found on 11th August, 1900, was probably about two days old. It had down on the crown and upper back, the rest of it being bare, showing the whole of the skin to be of a bluish-drab colour. The abdomen was an abnormal size and the vent large, characteristics of all the young found. On 11th September, on my approaching the nest, the young one jumped out, but was caught, when it screeched and struggled violently, using its feet vigorously. It was most unwilling to enter the nest and acted like the other one when placed therein. On 16th September I again visited the nest, with a view to photographing it, but, as feared, found it empty.

Another young one, nearly full grown, sat up silently in the nest when found, but when touched it struggled and screeched, using its claws freely. In this case the female bird came rushing up at once, but on seeing me darted back into the scrub and ran round the nest, making meanwhile her "Koo-wuk', koo-wuk'," and, in addition, the "Chungk, clungk" or "Bulu bulu" that Lyre-Birds make when undisturbed in the scrub. This nest was within half a mile of Jumbunna township, in an easily penetrable patch of scrub, which probably accounted for the timidity of the parent bird.

For the descriptions of nest, egg, &c., reference should be made to Mr. A. J. Campbell and Mr. Robt. Hall's observations in their publications.\* Nevertheless I shall give a few further personal observations. Nests have been found in various places. The one most favoured by the bird in South Gippsland is the side of a deep channel or creek under a slightly overhanging bank, with ferns

\* A. J. Campbell, "Nests and Eggs of Australian Birds," pp. 510-523; Robert Hall, "The Insectivorous Birds of Victoria," pp. 171-176.





Nest (on ground) of Lyre-bird.

FROM A PHOTO. BY A. J. CAMPBELL.



and leaves about (see Plate IX.) Another favourite one is among the roots of a large fallen tree, several feet from the ground, with vegetation growing out of the contained earth. In the Baw Baw and Walhalla districts Mr. J. Easton tells me that a large proportion of the nests occurs in tall stumps of trees. All the nests are placed so that the bird can have a clear space through which to fly or float out of sight on the approach of danger.

It has been stated that once a Lyre-Bird's egg has been touched by human hands the bird deserts the nest. However true this may be in individual cases, it by no means is general. On 26th August, 1900, I found a nest in South Gippsland and handled the egg. Between this date and 13th September I handled the egg on six different occasions. On the last visit the egg was quite cold, and the nest appeared to have been deserted, but on again visiting it on the 15th, a young one, apparently just hatched, was in it. The young bird was partially covered with down, as in the cases of those already mentioned. On 23rd September, 1900, the feathers were just showing through the skin on the top of the wings and the upper back. Further observations on this I had no opportunity to make, on account of leaving the locality. During this survey several abandoned nests, each with one egg, were found. In these cases I do not think that the nests had been voluntarily abandoned, but that the birds had been killed.

All the young birds mentioned in this article were sent to the National Museum, Melbourne, where they can be seen in the scenic case of the Lyre-Birds.

#### DANCING GROUNDS.

These dancing grounds are open spaces, generally about 3 feet in diameter, situated preferably in a rather clear place in a patch of dense scrub. In some cases they are raised several inches above the general level of the surrounding ground, while in others there is little or no difference in level. The surface, which is flat, appears to have been scratched up by the birds, and the sticks, roots, and pieces of grass or creepers thrown to one side. Numerous examples have been noted in various parts of eastern Victoria, but in no case have I seen any evidence of a beating down of the surface. They all had a more or less freshly scratched appearance. On only one occasion have I been fortunate enough to see the birds dancing. This was on the top of Mt. Wild Boar, about 8 o'clock on a foggy morning (19th March, 1896). When walking quietly along a track I suddenly heard and immediately saw two male birds performing on one of these grounds. They were alternately advancing and receding, turning, bowing, whirling, hopping, and running about round the ground. While doing this they raised and lowered their tails repeatedly. Sometimes they put their head through their raised tails, and, turning them, seemed to be admiring the lyre designs thereon. At the same time they were, in rather subdued tones, whistling beautifully, and mimicking all the forest birds. One female bird walked quietly round the dance, making a few

short hen-like notes, and pretended to pick up a grub here and there and to be unconcerned about the dance. She, however, cast occasional glances at the male birds, and was doubtless making her choice of a mate. I was in a hurry to search for a missing horse, and could not watch them for more than a few minutes, so quietly went past and left them undisturbed.

#### MIMICRY.

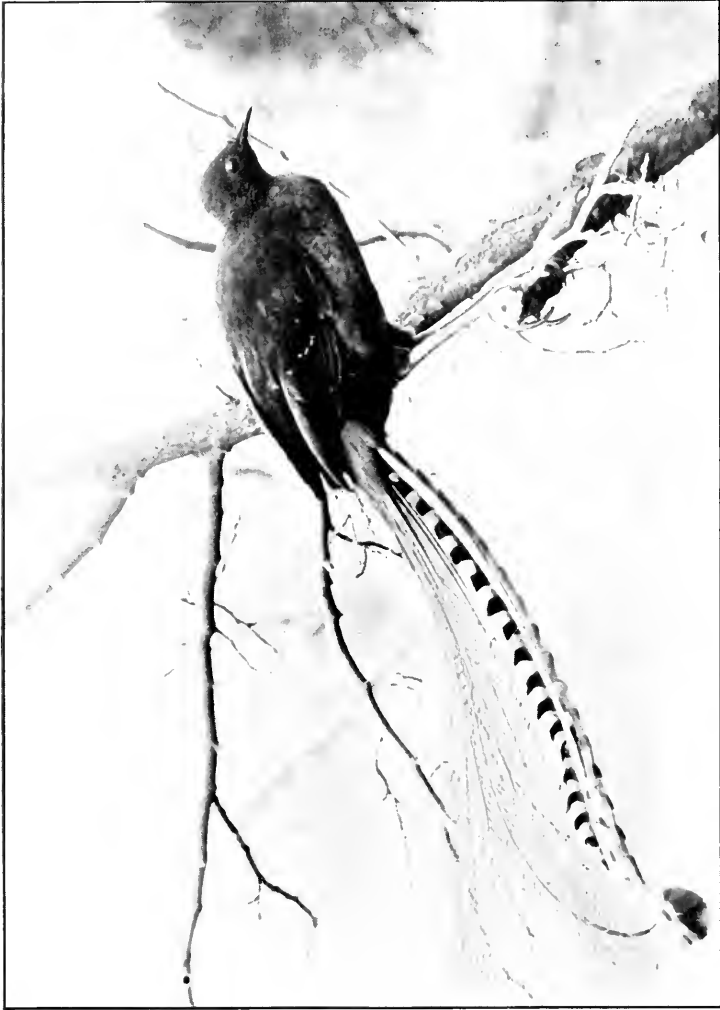
The Lyre-Bird is an extraordinarily good mimic. No sound is too difficult for it to reproduce, and the imitation, in the case of all sweetly musical notes, is an exact reproduction of the originals, while of those of a harsh nature it is a highly refined imitation. Its rendering of the rich liquid notes of the Grey Magpie (*Strepera cunicaudata*), the Butcher-Bird (*Cracticus destructor*), the Grey Thrush (*Collyriocinclla harmonica*), the Magpie (*Gymnorhina leucnota* and *G. tibicen*) is superb; similarly with the chirp and twitter of the small Scrub-Wrens and Tits. In the case of the Laughing Jackass (*Dacelo gigas*), the harsh, grating, laughter-like effort of this quaint bird is rendered in a manner so refined as to afford a pleasing contrast with the original. The swish of the coach-driver's whip, the sound of the saw and axe, which I have heard on the Blacks' Spur and near Marysville, are perfect deceptions, and the rapidity with which the notes of various birds are rendered, the gliding of one bird's notes into those of another, and the rendering of two or more simultaneously, are nothing short of marvellous. The male bird is much the better and more powerful whistler, but the female is practically as good a mimic. I have no doubt that the Lyre-Bird is a mocking bird, for, even supposing it to owe to heredity its faculty for imitating the birds of the forest, as has been suggested, it can have acquired the art of imitating sounds of human origin only since the settlement of the country in which it is found.

#### LYRE-BIRDS IN CAPTIVITY.

It is generally supposed that these birds cannot be reared and kept in captivity. Several attempts have, I believe, been made in the Zoological Gardens, Melbourne, but the birds have always died in a short time. There are several instances known, however, in which such attempts have been successful. The most notable one is that of a resident of the Wood's Point district (Upper Goulburn), who, so Mr. O. A. L. Whitelaw tells me, reared several of these birds, which fed with the fowls and were quite tame. The owner decided upon proceeding to America to exhibit the birds as one of the curiosities of Australia, but before matters had been arranged all of them were poisoned, it was supposed, by some malicious person.\*

\* Writing under "Nature Notes" in *The Argus* of the 28th July, 1905, Mr. Donald Macdonald incidentally substantiates this fact. A correspondent, Mr. J. C. Mahan, of Wood's Point, in giving some particulars about saving and keeping Lyre-Birds in captivity, states:—"When I found a nest I left the chicken for 30 days after it was





Lyre-bird (male).

FROM A PHOTO. BY F. P. GODFREY.

Other instances have been cited of a Lyre-Bird having been reared and kept for lengthened or brief periods of time† in the Drouin, Loch, and Omeo districts. Personally, I think it would be impracticable to keep a bird in captivity even after rearing it, unless it had access to some scrub affording shelter and a supply of insects.

#### GENERAL NOTES.

Though Lyre-Birds are chiefly found in the dense scrubby forest, they at times can be seen in fairly open country, but in such cases there is dense scrub at hand, and they disappear into this on the first approach of danger. In South Gippsland, where I have seen and heard hundreds of these birds, I never once saw them singing in cleared land, or even in open forest. Moreover, in no instance have I seen them feeding or running about on open ground. On one occasion I noticed about eight of them cross a narrow strip of cleared ground, about five chains wide, from one patch of scrub to another. They did this just before dusk by running quickly, jumping over logs, and floating one after the other. During the great bush fires in South Gippsland in 1898 hundreds of Lyre-Birds were burnt or starved, and I have been told by settlers that in the Jeetho district some of these birds came out of the burnt scrub and fed among the fowls near the farmhouses. This was doubtless owing to the destruction of insect life. It would indicate that they could in necessity become graminivorous birds. Mr. J. W. Bainbridge informs me that two Lyre-Birds have become so tame near Mrs. Manfield's Temperance Hotel, at the foot of Mount Buffalo, that Mr. Manfield has photographed one of the pair perched on the fence near the place.

Lyre-Birds may be seen at altitudes from 100 feet above sea level in the dense gullies of South Gippsland to those of close on 6,000 feet, or as high as arboreal vegetation ascends, in the Australian Alps. In November, 1890, when returning to Harrietville from Mt. Feathertop (6,303 feet), in the Australian Alps, I saw between

hatched; then snared the old bird, and carried them with the nest to a large wire-netted aviary. The chicken was thus fed naturally by the mother. On one occasion I had a chicken in the nest for 42 days. A bird that had been in my aviary for three or four years developed only three of the 'fringed feathers.' In my opinion the male bird does not reach its full plumage for eight years. I have never found more than 24 of the brown bars on a mature bird. It was a tedious and difficult task to accustom my birds to artificial food, and I lost thirteen before succeeding. The proof that I got the right system in the end was shown in the fact that after my birds had been maliciously poisoned they were opened and found to be lined with healthy fat, as the saying is. The late Mr. A. A. C. Le Souëf offered me £40 for the collection, and later Janrach's agent offered £115 a pair for three domesticated pairs, to be delivered in London. I was going to accept this offer, when all my birds were poisoned; then I lost heart and gave it up. If the National Park is ever established some Lyre-Birds should be turned down there. With the right conditions they would breed in captivity. The experience of my own aviary satisfied me as to that."—EDS.

† Mr. F. P. Godfrey, in *The Emu* (vol. v., p. 33), mentions Mr. S. McNeilly, of Drouin, having had a male Lyre-Bird in a state of domestication for 20 years. A photograph of this particular bird is herewith given (see Plate X.)—EDS.

20 and 30 male and female Lyre-Birds on the stunted snow gums (*E. pauciflora*) on the high ridge running from Feathertop and separating the Ovens River from Snowy Creek. They were at an altitude of about 5,700 feet, and near the timber line. It was nearly sunset when I was surprised to hear a medley of melodious sounds, as if all the birds of the bush were singing their best and loudest. Being alone and on foot, I was in their midst before they noticed me, but to my surprise they not only remained jumping about the trees, or with heads inclined watched me from the branches, but many of them continued their unsurpassable mimicry of other forest birds. I regretted that approaching darkness did not allow me to stay and watch them longer. At altitudes of from 5,000 feet to the timber line I have seen these birds, or evidence of them, on the high Gibbo Range, Mt. Wild Boar, Mt. Bogong, Mt. Stirling in Benambra, Victoria, and on the high timbered spurs of Mt. Kosciusko, N.S.W.\* Once, when camped, on 20th March, 1896, on the summit of Mt. Wild Boar, at an altitude of over 5,000 feet, I was awakened shortly after sunrise by beautiful and spirited whistling outside the tent entrance. On jumping up I found a male bird peering into the tent from a branch only a few feet away. After putting the camera together as hastily as circumstances permitted I had the mortification of seeing the bird glide away into the thick scrub just as I was about to take the photograph. Mr. Bainbridge informs me that he has heard during the winter a Lyre-Bird whistling on Mount Buffalo, at an altitude of 3,500 feet, and quite close to snow.

Lyre-Birds are very inquisitive when found in districts or places where they have not been molested by man. On passing through such country one is sometimes escorted for some distance by these birds, which pass from tree to tree along the line of march. I have been informed by Messrs. W. Baragwanath, jun., and J. Easton, that once when they were surveying a line on the flanks of Mt. Baw Baw a female bird came close up to the chain, watched it intently, and followed it as it was dragged along. Every time they made a noise the bird gave the well known alarm whistle and darted into the scrub, to return almost immediately and repeat these tactics for some time. On another occasion, in a creek near Mt. Useful, a male bird viewed them from blackwood trees 60-70 feet high, and disappeared only after several sticks had been thrown at him. On other occasions they have brought these birds close up to themselves by whistling the birds' own notes, in the same way that the King Lory can be decoyed.

Unlike some of the native birds, which give their songs at certain times through the day, Lyre-Birds may be heard in their haunts any time from dawn till dusk, regardless of the nature of the

\* Hitherto *Menura victorie* has been recorded for Victoria only, but it is natural to suppose that the same species is found in the ranges extending over the border of New South Wales. It is probable that the *M. superba* is not found south of the Blue Mountains. If it exist further south it would be interesting to find where the two species inosculate, if not intergrade.—EDS.

weather. On a misty day, when steady, light rain is falling, they may, perhaps, be said to be heard to the greatest advantage.

Lyre-Birds are inveterate scratchers, and are almost unceasingly at such work, somewhere or other in the bush. They must do a great deal of good by destroying myriads of insects destructive to vegetation. Unwittingly they also do a certain amount of harm, by partially obliterating tracks, filling up side cuttings and survey trenches, and uprooting or burying survey pegs. Some years ago I remember seeing a recently made track over the Bogong Pass, in Victoria, which had been rendered impracticable for horse traffic through being filled up in some places with masses of rock, logs of wood, and other *débris*. These had rolled down the steep sides of the mountain on account of their supports of humus and soil having been scratched away by these birds. Again, it is often impossible to exactly locate a survey trench or peg in Lyre-Bird ("Pheasant," as it is called by selectors) country, sometimes even shortly after they have been placed there. This causes some difficulty when the blaze (axe-cut mark) on the tree has been destroyed by bush fires. This habit of scratching amongst decayed vegetation and soil may account for the abundance of lice which, Mr. W. Baragwanath, jun., informs me, are to be found on most of these birds in the Baw Baw district of Gippland.

I have spoken of the flight of Lyre-Birds as a floating. As far as I have noticed they do not rise upwards in the air like a soaring bird, and cannot make a proper upward flight. But in going to a lower place they simply jump off a log or rock into the air with their wings outspread, and float or glide through it down a slope into a gully, sometimes taking advantage, every here and there, of a log or rock from which to get an additional spring. In a few seconds they can descend several hundreds of feet with very little apparent motion of the wings. It is an interesting sight to see the dark brown form of a departing Lyre-Bird as it hops on a fallen tree, floats under a tree-fern, or jumps off into space—silent, save for its first shrill whistle of alarm. While Lyre-Birds are fond of tree-fern gullies and dogwood (*Cassinia aculeata* and *C. longifolia*), "native hop" (*Daviesia latifolia*), and "wild hop" (*Goodenia ovata*) slopes and ridges, they are very partial to the patches of "blanket-wood" (*Senecio bedfordi*). This plant grows into small trees with lateral branches, and large, thick leaves, arranged more or less horizontally, thus forming a canopy. The ground beneath is usually not covered with ferns and small plants, but with decayed leaves and twigs, while the branches form convenient perches for the Lyre-Birds. There are thus open spaces between the foliage and the ground, and the birds are fond of moving about in them, hence the scrub is called locally "Pheasant scrub."

## Fruit-eating Birds.

BY A. G. CAMPBELL, MELBOURNE.

(*Written for the Nature Study Exhibition, Geelong, Easter, 1905.*  
*Non-competitive.*)

IN dealing with frugivorous birds we find a subject which apparently is of nothing but negative importance to the interests of a country. There is less direct bearing upon the welfare of a community than is found with the insectivorous section. But this is only on the surface. An axiom founded upon a general study of birds is that no bird is without its uses. Nature abhors a deadhead. So, taking up this proposition, we will endeavour to prove it among fruit-eating birds.

That the taste for fruit is developed with most of the birds that are called pests places us at once upon artificial, or shall we call it disturbed, ground. The birds never saw the civilised fruits of man before his advent here, and never knew what it was to dip their bills in their hidden sweetness or carry off the smaller berries, seeds and all. They lived previously upon insects, upon seed, and in a few instances upon native berries and tiny fruits.

But when their native forest was taken from them, with its store of provender, they, if not starved outright, or if not hardy enough to take to other available native food, came to look upon the crops and fruit trees planted in the clearings as legitimate spoil. This is further accentuated by the fact that the season in which the various kinds of fruit ripen is one when the natural supply of insect or other food is, with the approaching summer, beginning to be scarce. It often happens that in one district, adjacent may be to the virgin forest, the early fruit ripens untouched, for the birds are away attending to nests and offspring and living upon natural food, but the fruit crops after the new year suffer considerably.

It is indeed a serious thing to find birds developing and increasing in a taste for cultivated fruits, apart from their natural food, and it is almost beyond explanation, unless it be by the same principle which governs bees when they discover honey can be got without working very hard. The robbing of a weaker colony utterly demoralises the robbers while ruining the robbed.

Fruit-eating birds must not be judged too harshly. More observation and study are required before a proper estimate can be put upon either their depredations or their services, for these do exist in every case. Birds must not be utterly condemned because they are seen at a bad point. Ask the question of each one—Where are they during the remainder of the year, and what are they eating then?

Introduced birds are without doubt a more difficult problem than the native. All of them are pests in some way or other. Goldfinches and Sparrows strip valuable flower and vegetable seed from our gardens; Thrushes and Blackbirds destroy the softer fruits; while Minahs and Starlings are most inveterate fruit-



thieves, leaving nothing but the core and stem of the hardest apples and pears.

But we might stop to point out their respective usefulness, and to see therefrom that even the most unmitigated fruit destroyers have more points in their favour than against them. Goldfinches are very partial to seeds of thistle and other introduced weeds, and the Sparrows to the *aphides* or plant lice frequently so common in our gardens. Thrushes and Blackbirds keep down snails, slugs, and many soft-bodied insects, while the latter have a special liking for the green caterpillars of the vine. The Minah in the streets and in the field is an excellent scavenger and insect-eater. In the Starling it has a hardier and more ravenous companion, which has spread already far out into the country, where in flocks it is found devouring grasshoppers and caterpillars when these insect hordes are at their worst, threatening the produce of the land.

But the real difficulty with these and with most native fruit-eating birds lies here. The benefit is not direct to the person robbed. Some birds steal from the farmer to pay back to the pastoralist; some rob the fruit-grower and benefit the farmer or the forester. Looking, however, at the subject from the broadest and perhaps the proper point of view, the country is much the better for the presence of the birds, even if they do take a heavy toll for their services. Any difficulty in reaching this conclusion lies in the man, and not in the bird. If we were truly a socialistic community, with every man drawing the value of his energies from a common fund, we should have a more open mind to consider the birds in their proper place, and to allow them full liberty to perform the work for which alone they are fitted, and to allow a fair wage for their services in keeping the hordes of the insect world in check. At present the man who pays all the bill is not compensated by his country.

A list of native birds will, according to their economic value, show at least three groups, and in the analysis of these will be found much of interest and more for further study.

Firstly—Birds antagonistic to man at certain seasons.

This needs further subdivision.

1. To the orchardist.
2. To the farmer.
3. To the pastoralist. To others in special branches, like the poultry farmer, beekeeper, &c.

1. The orchardist admits that his crops of fruit are an immense temptation to birds, but the question of how to keep them most effectually from taking more than a fair share of his profits, and that without lessening their serviceableness (if any) elsewhere, is the question that should most occupy his mind. The experiences of thoughtful orchardists would be welcome.

However, generally speaking, in districts away from the introduced birds of the cities, it is found that previous to Christmas time birds do not come about the orchards in any numbers. They have, in truth, the important duties of nesting and rearing

of young to attend to away in the forest, and so the soft berry fruits, as well as apricots and many peaches, mature unharmed. Only along river frontages or adjacent to forest areas are orchards liable to the depredations of native birds at this time of the year.

Further, it is well known that most fruits are mature some time before ripe, and, as they are independent of the parent tree, can be picked, and will ripen as well, if not better, in the storeroom or in cases on the way to market. So if the orchardist is abreast of his work the birds are cheated of their spoil.

If birds, native or introduced, should be persistent at any time of the season, especially on fruits not yet mature, ingenious scarecrows are very effective in frightening them away, but they may come in such numbers at times that there is nothing for it but to employ several guns to keep the birds persistently scared and save the crop.

Birds troublesome to orchardists are—Raven, Black and Grey Magpies, Bower-Birds, Leatherhead (Friar-Bird), Wattle-Bird, White-plumed Honey-eater, White-eye, and occasionally the Black-backed Magpie, besides the introduced Sparrow, Thrush, Blackbird, Minah, and Starling. One species in one district and one in another may be a source of some annoyance, but all the native birds are shy in the extreme and easily kept away by a determined effort.

2. To the farmer those specially troublesome are the Magpie (both Black-backed and White-backed), White Cockatoo, the Galah, and perhaps the Ibis and the Native Companion. These put in an appearance at sowing time and pick up as much wheat as they can find upon the surface, where, incidentally, the grain would never germinate well. But it is far more likely that such birds as the Magpie, the Ibis, and the Native Companion are attracted to the corn field by the number of cutworms, caterpillars, and chafer grubs, and possibly locusts, which are there also, much more eager for the sown grain. It is quite correct for the present to refer to these as fruit-eating birds, because the wheat grain is botanically a fruit and not a seed.

3. In producing industries which take the fruit of the land in other forms there are birds of special interest to be touched upon. To the pastoralist the Raven and the Eaglehawk are a source of loss in the lambing season, to the poultry farmer the Hawks, and to the beekeeper the Wood-Swallow and the Bee-eater all demand a share in the profits. But to direct attention to the absurd way in which the birds are treated it is only necessary to state the case of the Hawks. Because a few young poultry are taken (when they ought to have at least some cover to run to) there is a general desire to shoot all and sundry. Now there are only three species known to pilfer about the fowl-yard, and they only appear in the late summer and autumn, being busy themselves in rearing young away in some secluded forest during the time of the year when the main crop of chickens is about.

Among these birds enumerated under the first group are some of the confessedly most useful insectivorous birds, the impor-

tance of which to a country's welfare cannot be overestimated. Are we then, because of one discernible bad point, to endeavour to drive away or exterminate the whole tribe? Far from it! Many of them are one month in the crop or the orchard against eleven months of useful and sober living elsewhere. Let them have their liberty, or it will be to our ultimate sorrow.

To the accusation contained in the heading of "birds antagonistic at certain seasons," we are obliged to add, "but which more than compensate by keeping in check, over the greater part of the year, insects—a greater evil."

Second group—Birds with no good intentions and no very direct compensations.

Examples—Blue Mountain Lorikeet, the Musky Lorikeet, the Rosella, and, perchance, other Parrakeets.

The first two mentioned are birds which in flocks sweep down with sometimes immense destruction upon the orchardist. They are so persistent that they may even be knocked off the trees with a stick. To shoot them until the flock is decimated or driven away is often the only way to deal with such a visitation. They come late in the season, however, but will soon destroy the hard apples and pears which may not have reached maturity.

The Rosella, in pairs more often than in small flocks, is also a very exasperating fruit-destroyer, and is perhaps one of those few species which could be shot indiscriminately. It has not such an important function in the forest as the Lorikeets among the scale-insects, and it would not be missed if partially exterminated.

The large Lorikeets are troublesome alike to the agriculturist who essays maize-growing, for in favoured spots they will play havoc with the ripening corn. The 'Keets throughout are deserving of less consideration than any other genus of birds, from a producer's point of view.

A third group needs a brief mention to complete the review of the birds generally from an economic point of view—Birds serving the public good and taking no compensation.

This embraces all the useful birds of the first importance—no less than the whole insectivorous section, excepting, however, those it was found necessary to place in Group No. 1. They are not by any means fruit-eaters, and so are not deserving of anything but brief mention now. Of most obvious use, however, among insectivorous birds are the Magpie and Raven, which devour locusts, besides chafer grubs and cutworms: Kingfishers and Plovers, and many wading birds, which eat worms, slugs, and snails; and, above all, birds like the Stone-Plover, Wild Turkey, and Ibis, which patrol the Riverina plains, the nursery grounds of myriads of locusts, from whence, once the insects reach the winged stage, they might spread far and wide, carrying devastation not only to orchards, but to every other kind of vegetation they came across. The Ibis is without doubt the foremost locust-destroyer: it goes in flocks, and with its long bill has no difficulty in catching the young or grasshopper stage in myriads. One bird's stomach on examination

contained over 2,000 young locusts, and this number only represented one meal for one individual in a flock of many hundreds.

Against that other vegetation-destroyer, the caterpillar or army worm, the Ibis would still be useful, together with such as the Raven, Magpie, Chough, Jumper, Plover, and Wild Turkey.

An examination, then, of the case of fruit-eating birds shows many points in their favour, for they give many compensations in ways that would be more readily estimated perhaps in the sorrows of a community were they removed. The fruit-eating birds are deserving of much better treatment than is usually given them.

## Field Notes on Birds of the Richmond District, North Queensland.

BY FREDC. L. BERNEY.

### PART II.

**PALE FLYCATCHER** (*Micræca pallida*).—The Pale Flycatcher is a constant resident with us. I think, judging by the volume of song, that they commence pairing in July; I found a nest with one youngster on 10th August, 1890, and another with two youngsters on 24th October the year previous. The feathers were just showing on the first lot; the others were half-fledged. They feed very late in the evening. I have noticed them when it was almost dark darting off some coign of vantage after insects on the wing. They are sweet singers, one of our best, and one of the earliest to be heard in the morning—it is hardly daylight when they start.

**WHITE-SHAFTED FANTAIL** (*Rhipidura albiscapa*).—A winter visitor, never numerous, generally singly, occasionally a pair. In the course of seven years I have only one summer record—6th January this year. Of one I obtained for examination (2nd May, female, ovaries very minute, Mr. A. J. Campbell wrote:—"The white parts in tail of specimen sent are more extensive than usual." A most energetic little bird, always on the go.

**BLACK-AND-WHITE FANTAIL** (*Rhipidura tricolor*).—Always with us, but prefers the lightly timbered country to the open downs. I cannot recognize any regular migratory movement among them, but we had during April and May last year (1904) a very large influx of "Shepherds' Companions," as they are universally called. Mating commences in September. My earliest note of eggs is 1st October, and the latest 23rd January. The clutch seems to be three eggs as often as four. I have known the same nest used for three broods in succession—a late brood one year and two the following season. Their "sweet pretty creature" calls may often be heard during moonlight nights.

**RESTLESS FLYCATCHER** (*Sisura inquieta*).—Only seen occasionally, during the winter months.

**RED-CAPPED ROBIN** (*Petræca goodenovi*).—This showy little Robin was here through the winters of 1902 and 1904, but I did not see them at any time during 1903; they showed up suddenly at the end of January this year, and have been with us in considerable numbers ever since.

YELLOW-TINTED TREE-TIT (*Smicrornis flavescens*).—Here all the year round; their cheertful and lively notes may be heard daily as the tiny birds thread their way among the trees—eucalypts for choice, and always the tops of them. I found a nest containing two slightly incubated eggs on the 5th June, 1903, suspended among the foliage at the end of a coolibah (eucalypt limb). The structure was domed, entrance high up on the side, and was composed of the seed-head portion of very fine grasses and sheep's wool, bound together with spiders' web and dotted over with spider egg-cocoons and the pollen portion of some small flower.

WHITE-WINGED WREN (*Malurus leucopterus*).—Saw this species about in the summer of 1899, and obtained a male that Mr. C. W. de Vis kindly identified for me, and again in midwinter of 1901, but these are the only notes I have concerning them. Both times they were among polygonum bushes round a swamp.

VARIEGATED WREN (*Malurus lamberti*).—Shot a full-plumaged male in December, 1899.

REED-WARBLER (*Acrocephalus australis*).—With the advent of the artesian bore streams and their attendant bulrushes (*Typha*) the Reed-Warblers have invaded the Western downs, and are now common where previously they were unknown. They are really beautiful songsters—possibly our very best—and from their rich notes and the habit of singing at night might well be called the Nightingale's understudy. A degree or two of frost does not deter them, and their song seemingly sounds better in the crisp, dry air. I have found nests with eggs and others with young in November and December.

SPOTTED BOWER-BIRD (*Chlamydodera maculata*).—To be seen fairly frequently about the scrubby districts. A "play-house" that I found was shortly after abandoned and dismantled, the best of everything being removed to a new site three or four hundred yards away.

GRASS-WARBLER (*Cisticola exilis*).—The Grass-Warbler is a constant resident with us, but is much more often heard than seen; it keeps to the bulrush beds, where one may sight its small form as it clings to the top of a rush for a moment and then drops out of sight. This bird has a single sweet liquid note, with which is interspersed a sharp buzzing sound. I have found its rather peculiar nests, of which an excellent illustration is given in the Australian Museum's No. 1 *Special Catalogue*, but not until they had fulfilled the purpose for which they were constructed. I notice by the publication just quoted that Mr. A. J. North considers this a coastal bird.

YELLOW-RUMPED TIT (*Acanthiza chrysorrhoa*).—This elsewhere familiar Tit is a rare bird in these parts. I have only come across it once or twice, and one of these occasions includes a nest and three eggs. This latter observation was made on the Flinders, 40 miles below Richmond. I suppose this must be its most northern limit, but going south from here I used to see this species and find its two-storied nests fairly frequently on Cameron Downs, 40 miles south of Hughenden, while in the Blackall district of the Barcoo it was common.

BABBLER (*Pomatorhinus temporalis*).—To be seen pretty constantly on suitable timbered country, where their big stick nests are conspicuous objects. On 30th March I examined one of these, and found it to contain an addled egg and one chick a few hours old; and

I have seen youngsters that could not fly sufficiently to get away in April and October. I caught one of these latter, and on its crying out I was at once surrounded by a flock of 20 old birds, which jumped and scolded in an unmistakable manner. As a rule they go in parties of seven to ten.

**BLACK-BREASTED SONG-LARK** (*Cinclorhamphus cruralis*).—A migratory bird, very much more numerous in the summer than the winter. It nests with us. For details of its movements, and, to save repetition, reference may be made to vol. iv. of *The Emu*, p. 43.

I remember one fearfully hot day in January, 1902, when I was driving a mob of wethers across open downs. The sheep rounded up and went into camp early in the day, and I made for the only shade (save the mark!) in the landscape—a little, miserable bush, under which I crept, drawing myself up into the shape of an X to fit the scanty shade. I placed an *Australasian* on my knees and prepared to make the best of things through the intense heat; but I found I was jumping the claim of a lot of Bush-Larks (*Mirafra* and Black-breasted Song-Larks, which were also driven to the shade, panting, with open beaks; but, nothing daunted, they clustered round any portion of me that threw a shadow. Some got under the angle formed by my legs, while one *cruralis* hopped on to my lap and sat contentedly under the shade of the newspaper.

**RUFIOUS SONG-LARK** (*Cinclorhamphus rufescens*).—Whereas *cruralis* is found on the open country *rufescens* prefers the lightly timbered forest. Generally on the ground, it moves about in a quiet, retiring manner, takes to the branches of a neighbouring tree or bush when flushed, and returns to the ground again as soon as the disturbing object has passed. It is here winter and summer, but never in any great numbers, and most probably has a migratory movement.

**TRICOLOURED BUSH-CHAT** (*Ephthianura tricolor*).—This beauty is always here, but in greatly increased numbers during the winter. This winter they are more numerous than I ever have seen them before; they seem to be scattered over the ground everywhere. The description of the plumage in Gould's *Handbook* is not accurate, but that given in the Australian Museum's No. 1 *Special Catalogue* is excellent. Its only note appears to be an insignificant "Chip, chip, chipper, chipper, chip," uttered impatiently on the wing.

**ORANGE-FRONTED BUSH-CHAT** (*Ephthianura aurifrons*).—A rare and irregular visitor. A few appear at odd seasons, remain two or three weeks, and then disappear again for perhaps a couple of years.

**BLACK-BACKED MAGPIE** (*Gymnorhina tibicen*).—The Magpie is always here, and pretty numerously represented. I think this is the earliest of the early birds, for its beautiful notes may be heard with the faintest streaks of the dawn. I have a good many notes of nests with eggs or young birds in September.

**BLACK-THROATED BUTCHER-BIRD** (*Cracticus nigrigularis*).—A constant resident among the timbered country, nesting in September and October.

**BUTCHER-BIRD** (*Cracticus destructor*).—Common enough at Spring Valley, where the scrubby country suits it, but I never see it away from the scrub. *Destructor* has an ominous-looking hook at the end of the upper mandible, which, together with the upturned extremity

of the lower one, bodes ill for any small animal that gets between them.

**NORTHERN THICKHEAD** (*Pachycephala falcata*).—I have only one record—a male, obtained on the river, 30th May, 1902.

**RUFOUS-BREASTED THICKHEAD** (*Pachycephala rufiventris*). Very common among any lightly timbered country or open scrub. A nest with eggs was found on 14th October—my only note in this connection.

**BLACK-BACKED TREE-CREEPER** (*Climacteris melanonota*).—The loud "Spink, spink" of this *Climacteris* is to be heard fairly frequently among the river timber. To make sure of the species I shot a specimen for identification. Later in the same day 13th January, 1904 I watched a pair feeding a nestful of young in a hollow spout, five and thirty feet from the ground, in a river gum. This species has a most peculiar cheesy or mouse-trap smell; it is most curious, and strikes one as soon as the bird is handled.

**STRIATED TREE-RUNNER** (*Sittella striata*).—Not to be seen very frequently. Its visits, generally in small parties of eight or thereabout, do not appear to be confined to any one season of the year. Its feet are large for the size of the bird, but eminently adapted for running up or down the rough bark of trees. The peculiarly shaped bill, too—long and narrow, with a slight dip in the culmen—is beautifully suited for searching out insects in crevices. It hunts the foliage as well as the trunks, and on the latter is just as much at home running head downward as going up.

**BLOOD HONEY-EATER** (*Myzomela sanguineolenta*).—I found an individual resting, weak and dazed, on the verandah at Wyangarie, which died a couple of hours later—from simple poverty, it seemed. It was an entire stranger to me, and must, I think, have been considerably out of its beat. It was a young bird.

**WHITE-FRONTED HONEY-EATER** (*Glycyphila albigrons*).—I have only come across this Honey-eater once—11th July, 1904 and then I obtained a male among the tea-tree (*Melaleuca leucadendron*) along the Flinders River. Dissection, I am sorry to say, proved that it must have had a sitting mate close by. It has a cheerful song.

**BROWN HONEY-EATER** (*Glycyphila ocularis*).—Found a nest containing two eggs, white and spotless, on 2nd June, 1905, which is, I think, an unusual date. They are sweet singers. From experience I can quite bear out Gould's statement that "while the female is sitting on her eggs the male sings all day, with scarcely any intermission." The little Brown Honey-eaters are plentiful on Spring Valley, and can be heard along any watercourse where the tea-trees and eucalypts are in flower. I think, with Mr. Tom Carter, that they confine themselves to the vicinity of ranges.\*

**YELLOW MINER** (*Myzantha lutea*).—A permanent resident, and a very noisy one, and breeds apparently all the year round. I was much interested in making the acquaintance of a pair at Gladevale homestead, where they had become so tame that they would enter the diningroom at meal times, and while waiting to be served would perch on the cruet stand, the back of your chair, or any convenient spot; this, too, with several people seated at table and a cat on the floor. A

\* *Ibis*, vol. iii., p. 92.

few small pieces of bread or cake put down for them by the side of your plate are quickly gathered up without the birds showing any fear. Honey on a plate is much relished by them, and they like a jam tin to clean out. They had a nest some 20 yards away from the house, and later used to bring their family with them. They are the tamest wild birds I ever came across. The site for the nest is usually the top of a coolibah or whitewood (*Atalaya hemiglauca*), at a distance of 20 or 30 feet from the ground.

**SPINY-CHEEKED HONEY-EATER** (*Acanthogenys rufigularis*).—Although never numerous, still in suitable localities the Spiny-cheeked Honey-eater may be seen or heard all through the year. At times I miss it for a while, but this is doubtless owing to a temporary shortage of some item in its *menu*. It is particularly partial to the honey of the mistletoe (*Loranthus quandong*). I have pleasant recollections of them at one camp where our dining table was built under the refreshing shade of a baubinia (*B. carronii*). Here "Spiny-checks" would busy himself all day, passing from bunch to bunch of the mistletoe with which the tree was covered, our meals being accompanied by its quaint but cheerful song—just a subdued, bubbling, gurgling song, that was very pleasant to listen to.

**WHITE-QUILLED HONEY-EATER** (*Entomyza albigularis*).—I believe I am right in including this Honey-eater in my list on the strength of having watched (October, 1903) a pair at fairly close quarters, with the aid of field glasses; they were among the gums on the river.

**FRIAR-BIRD** (*Philemon corniculatus*).—The common Friar-Bird is only occasionally met with along the Flinders River, but about the heads of the creeks that issue from the basalt ranges their chattering cries are always to be heard.

**YELLOW-THROATED FRIAR-BIRD** (*Philemon citreogularis*).—Unlike the larger *corniculatus*, this Friar-Bird is plentiful along the river, but quite absent about the basalt country. It, too, is a noisy bird. A nest of this species contained three eggs on 8th January.

**LITTLE FRIAR-BIRD** (*Philemon citreogularis*, sub-sp. *sordidus*).—Have seen it frequently at Spring Valley during the past winter, where I obtained a specimen that was kindly identified for me by Mr. A. J. Campbell. It is not as garrulous as its relatives before mentioned.

**FLOWER-PECKER** (*Dicaeum hirundinaceum*).—I have come across the *Dicaeum* in August, 1902, and again in June, 1905. A specimen obtained in the former month had the testes very fully developed, and therefore I suppose the birds were nesting in the district.

**RED-BROWED PARDALOTE** (*Pardalotus rubricatus*).—Only identified once—December, 1902—when I obtained a specimen on the river.

**BLACK-HEADED PARDALOTE** (*Pardalotus melanocephalus*).—A very common Pardalote here. Its monotonous "Chuc, chuc" is heard all day long on the river. A nest containing two eggs was found in a sandbank on 27th June, 1903.

**SWALLOW** (*Hirundo neoxena*).—Previously to 1903 we used to see the Swallows in fairly large numbers, but for the years 1903 and 1904 I have only one record for each year, and both those winter records, while for 1905 to date (August) I have seen none.

**BLACK-AND-WHITE SWALLOW** (*Cheramacca leucosternum*).—A very



uncertain visitor at any time, and then in small numbers. During the past twelve months they have not showed up at all.

**FAIRY MARTIN** (*Petrochelidon ariel*).—Almost always with us, generally in good numbers. A migratory bird, the place of those that leave being taken by those that arrive; both lots nest in the district. (See *Emu*, vol. iv., p. 45.)

**GROUND-LARK** (*Anthus australis*).—My experience so far leads me to look upon the Ground-Lark as a winter visitor, occurrences of the bird during the summer being only occasional.

**WHITE-RUMPED WOOD-SWALLOW** (*Artamus leucogaster*).—During the summer the White-rumped Wood-Swallows are here in fair numbers, but as the winter approaches they slip away, till in July they are represented by only occasional birds. Some winters they are entirely absent. They come back to us in August, and commence nesting without delay, as I have seen one sitting on its nest—it had made use of a disused Magpie-Lark's (*Grallina*)—on 27th August. It is a smart bird in appearance, and the most aerial of the *Artami*, except, perhaps, *A. minor*. From my diary I take the following:—" *Artamus leucogaster* are here now (2nd August) in some numbers; I counted to-day one little party of thirteen up in the topmost branches of a gum on the river bank. They generally select the tops of the tallest trees, and from this point of vantage watch for any insects on the wing, now and again leaving their perch to sail round and round on easy wing. Situated as they were high overhead, all I could see was their under surface—an expanse of spotless white shirt-front, topped with a sooty-grey head—reminding me of a gathering of negro minstrels. Nestling together in a row, they were on the best of terms, this little party, and as each returned after having a look round it shuffled along the limb till it was tight up against the outside bird, when it settled down, and called with contented chirps with a strong twang to a companion still floating in the beams of the lowering sun."

**WHITE-BROWED WOOD-SWALLOW** (*Artamus superciliosus*).—A winter resident, when it may be seen in big flocks, in company of *A. personatus*, feeding and flying together and twittering like a lot of Sparrows. The fact of these birds seeking honey from the flowers, which I reported in *The Emu* (vol. ii., p. 217) was doubted by some readers, but as the birds have brush tongues the habit should not have been unexpected. However, one of our contributors (Miss Bowie), writing to *The Emu* (vol. iii., p. 112) later, supported my statement from observations made on these birds in confinement, and I am glad to notice in the same journal (vol. ii., p. 59) Mr. R. Hall's correspondent, Mr. J. P. Rogers, adds a note, with skins of these birds collected in N.W. Australia, that "They are now feeding upon the honey-laden flowers, in company of *A. personatus*, and this perhaps accounts for their brush-tongues."

I never saw any sign of their nesting here, and during the months October to February inclusive I have only one record—I saw two on the 10th December, 1868.

**MASKED WOOD-SWALLOW** (*Artamus personatus*).—There seems to be a closer family tie between this *Artamus* and the preceding one than between any of the other *Artami* in this district. The remarks on this bird are practically a repetition of those given for *A. superciliosus*. But in 1868 a few pairs remained through the summer to breed, as I found a nest in November and two in December that year; two eggs

in each of the latter, but the former was empty, although I put the bird off its nest.

**BLACK-FACED WOOD-SWALLOW** (*Artamus melanops*).—A constant resident, nesting here regularly. They pair in August, and I have seen young leave the nest early in September, and from then on I have found eggs up to 5th February. The clutch is generally three, but on two occasions I have seen four. On one occasion I saw a pair eating honey, and mentioned the instance in connection with the two preceding species, but reported it as *A. cinereus*, which was incorrect, as it should have been *melanops*. We have not *A. cinereus* in these parts. I have seen as many as sixteen *melanops* together, but they do not flock.

**LITTLE WOOD-SWALLOW** (*Artamus minor*).—A few of these interesting little birds are to be seen all through the year. Although I have never seen them nesting about Richmond, I have found a nest with two squabs in December at Homestead, on the Campaspe River.

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## A Trip to the West.

BY E. B. NICHOLLS, North Melbourne.

(*Read before the Bird Observers' Club, 23rd August, 1905.*)

AFTER a five-days' storm-tossed trip across the Great Australian Bight the first glimpse of Western Australia was one of disappointment. From the deck of the steamer the barren, rocky headland of Cape Vancouver looked bleak and dismal in the dim grey light of early morning. But, treeless and uninviting as it appeared, it was land, and as an insatiable longing for something solid underfoot had long since overcome all other desires, I restrained my feelings, and agreed with a fellow-passenger, who had not missed a meal and was ostentatiously proud of the fact, that the view was magnificent.

Presently, as the rays of the sun scattered over the waves, the islands of Breaksea and Michaelmas loomed in the distance, the limestone structure of the lighthouse on the former glinting conspicuously in the seascape. Breaksea, some nine miles from Albany, is placed midway between the two points of land which guard the entrance to King George's Sound. Cape Vancouver forms the eastern extremity. The western, a precipitous sandstone cliff some three hundred feet high, is known as Bald Head. Visiting the island at a later date it was found that the Mutton-Birds or Flesh-footed Petrels (*Puffinus carneipes*) had nested in the deserted burrows of the rabbits which overrun the place. Many years ago they were isolated there by the Albany town authorities, who very wisely would not permit of their being liberated on the mainland. But this four-footed scourge has worked its way, with the help of an occasional wet season, across the Continent, and is now to be found at Esperance, a port 250 miles to the east of Albany. The migration has been carried out in spite of the intervening desert and a wire-netted fence, which, starting from the south coast, near Esperance, runs for one thousand miles inland—in other words, half-way across Australia. The primitive fauna, the forerunners of

the South and Western Australian marsupials, crossing from Tasmania, ages and ages ago, by a land bridge now represented by Bass Strait, travelled westward, in the same direction as did the rabbits, and so entered and stocked the country. But during that remote period, an abundant rainfall and a luxuriant vegetation, together with the absence of enemies, made easy the passage way.

It was immediately after leaving the steamer, and whilst walking along the roadway leading from the jetty to the town of Albany, that the first land birds were met with. These, the Long-billed Honey-eaters (*Meliornis longirostris*), a sub-species or variety of the New Holland or White-bearded Honey-eater, were readily distinguished by the lanceolate streaks of black and white along the breast and abdomen, the yellow in the wings, and the white cheek-patches. The birds were dipping their bills into the long flower-tubes of a peculiar shrub, known as the "kangaroo paw," which grows about 4 feet in height and has the terminal flowers arranged on the end of the stalk like the outspread claws on the fore-paw of a kangaroo.

A White-fronted Bush-Chat (*Ephthianura albifrons*) was next flushed as it ran along the roadside. Two out of the four species which constitute this typical Australian family are recorded for the district, the other being the Tricoloured (*E. tricolor*). During a holiday extending from February to June, and spent partly in the town and partly in the forest, many different kinds of birds were noted. In the private and public gardens, where the crimson-flowering gums (*Eucalyptus ficifolia*)—perhaps the most beautiful and ornamental of Australian trees—bloom in varying shades of red, the small, inquisitive Green-backed White-eye (*Zosterops gouldi*), the White-browed Spinebill (*Acanthorhynchus superciliosus*), and the Western White-naped Honey-eater (*Melithreptus chloropsis*), together with the Little Wattle-Bird (*Acanthochara lunulata*), chased and scolded one another as they gleaned a late harvest from the last of the flowers and insects. Later on, in the month of May, when a fine clump of transplanted Tasmanian blue gums burst into early blossom, a flock of the Purple-crowned Lorikeets (*Glossopsittacus porphyrocephalus*), with that unerring instinct which we cannot explain, found them out the following day, and continued their visits every morning for some weeks. These Lorikeets, rather scarce in Victoria, fly in flocks of twenty or so, though sometimes they collect in hundreds. I often met with them whilst walking through the bush, and noticed a peculiarity. If you fire a gun or shout out loudly the whole flock dart towards the ground like a flash, and fly with amazing speed only a few feet above the grass. The aborigines, taking advantage of that peculiarity, used to build a sort of brush fence, whitewashing it with the pipeclay mixture they used in their corroborees. When the birds passed overhead, the blacks raised a great clamour, and the panic-stricken Parrots, dropping to earth, flew into the brush and were caught in hundreds. Round about Albany the boys often frighten them into wire-netting in the same way.

It was whilst camped with a party of naturalists at Tor Bay, a little estuary of the sea some fifteen miles to the westward of Albany, that a search was made for that *rara avis*, the Noisy Scrub-Bird (*Atrichia clamosa*). One damp morning, after buttering our boots as Thoreau did for his long walks in the Maine woods, we left camp to work the valley behind the first ridge of sand hills on the western side of the bay. It is very dense, with a close growth of squat tea-tree, dwarfed peppermint, and a strange, short, stumpy bush, which covers acres of ground, and is bound together by a species of dodder. It makes a tangle so thick that one forces his way through it with difficulty, but it is fine cover for the flocks of Brown Quail (*Syucecus australis*), which are there this year in exceptional numbers. We stopped often, as much to take breath, I think, as to listen for that characteristic note, which all naturalists who have heard it describe as a loud, rising whistle, ending with a sharpness like the crack of a whip. But the roar of the surf upon the sands was so great that it smothered all lesser distant sounds. So we struck inland to the tall karri (*Eucalyptus*) timber, which looked such a promising field for search. High up in the karri gums Parrakeets were feeding and squabbling. The largest of them all, the Yellow-collared (*Barnardius semitorquatus*), is better known as the "Twenty-eight," from its call. It is as large almost as the King Lory (*Aprosmitus cyanopygius*), green in colour, except for the blackish-brown head and necklet of bright yellow. We shot one, and as it fell shrieking to the ground, fifty or so of the Parrakeets fluttered round in circles amongst the tree-tops, calling "Twenty-eight" in plain and forcible English. When we picked up the bird by the leg a stream of honey flowed from its bill. It was gorged with the rich nectar of the flowering karri, jarrab, and red (beautiful-leaved) gums; fully four or five tablespoonfuls must have trickled from it. All through the year, in this south-western corner of the State, there is a constant succession of honey-bearing trees and shrubs in flower. We were now in the same valley that Campbell had traversed fifteen years before, when he obtained his specimen—a male—of the mysterious Scrub-Bird.\* Once I fired blindly at sight of a small brown bird running through the scrub, but soon found that I was only alarming myself unnecessarily, as well as the Brown Quails. We were taking no risks of missing "Mrs. Atrichia," as Jackson calls her. Occasionally we stepped out upon grassy glades, with the "pads" of wallabies and bandicoots crossing and running into one another like the lines in a railway yard. We crawled through tangles, and searched thicket after thicket, watching, listening, and startled occasionally by false alarms, when the Buff-bellied Shrike-Thrush (*Collyriocincla rufiventris*), Rufous Tree-creeper (*Climacteris rufa*), and Western Thickhead (*Pachycephalus occidentalis*) burst into their sharp, loud whistle. The Thickhead's note, cracking like a little coachwhip, frequently deceived us. Otherwise there was never a note

\* One nest has since been found ("Nest and Eggs," Campbell, p. 1,080), but the female has never been obtained.

that suggested the Scrub-Bird, which must be rarer than we imagined.

At Denmark, a timber mill township situated on Wilson's Inlet, some 30 miles still further west, specimens of the Red- and White-tailed Cockatoos (*Calyptorhynchi stellatus* and *baudini*), exclusively Western forms, were secured. Both birds are found in the south-west coastal strip of country, using their powerful bills for stripping the bark from the trees in search of grubs, and also for crushing the hard cups of the eucalypts in order to get at the seeds. The laboured flight and weird, shrieking cry are common to both species. It is always a difficult matter to describe the call or song of a bird, but occasionally, as all of us at times have experienced, the desired contrast presents itself in the most unexpected manner and place. One day in Albany, whilst watching a top-dressing being laid on a tennis court, a flock of thirteen Red-tailed Cockatoos passed overhead, uttering their shrill cries. At that moment the heavy roller was drawn across the court, and the harsh creaking of the rusty iron cylinder as it turned on the axle sounded so like the cry of the birds that I was constrained to make a note of it. In the tall timber of the forest the Western Rosella, or Yellow-cheeked Parrakeet (*Platycercus icterotis*), differing from the Eastern form (*P. eximius*) chiefly in that the cheeks are yellow in colour instead of white, and the Red-capped Parrakeet (*Porphyrocephalus spurius*), with its long, overlapping upper mandible, are very plentiful. The last mentioned, a bird of truly gorgeous plumage, is readily distinguished by the deep red crown, green back, violet-blue breast, yellow rump, and under tail coverts of scarlet. In the cleared patch around the hut of the fisher folk, whose hospitality I enjoyed whilst at Denmark, poultry roamed at large, and with them a Black-tailed Native-Hen (*Microtribonyx ventralis*) about the size of a bantam. It fed with the fowls, picking up grain, thistle, grass, and the like, and was very pugnacious. On one occasion it fought and defeated the champion "rooster" of the yard, a bird six times its own size, covering the foe with his own blood and putting him to ignominious flight. When perturbed by the presence of a stranger, the constant flicking of the small tail, spread fanwise, was very marked: this the more so just prior to the "closely pressed" bird seeking shelter across the river on the bank on which the fishing camp was built. In flying it rose gently from the ground, after a short run, without any noisy flapping or whirring of wings, and slowly drew up the dangling legs into a horizontal position as the flight balance was gained.

Wilson's Inlet is larger than King George's Sound, but is blocked by a sand bar at its mouth. It is made up of a series of horseshoe-shaped bays encircling a wide expanse of shallow water, which, in parts, teems with wildfowl. Strolling with a companion, one bright sunny afternoon, along the curving shore of one of the many bays towards a famous avine retreat, locally known as Bird Island, an occasional low musical note struck upon our ears and puzzled us as to its whereabouts. The sea bed here consists of an immense

flat sheet of rock studded with small sharp pieces of stone, which project above the surface of the water. Thinking that the lap of a wave striking against one of the miniature pinnacles containing a blow-hole might in some way account for the sound, we stopped, and after marking down the precise spot whence it next arose, waded out a few steps, little more than ankle deep, and as we stooped to examine the rock the note sounded again, but there was no blow-hole. Time after time we were baffled. In sheer desperation my friend tried to attribute the cause to the shoals of fish fry which darted before us in the shallow pools as we splashed along. At last we noticed a flock of Musk-Ducks (*Biziura lobata*) fully half a mile out. From these the notes undoubtedly came. After listening for a while we could distinguish the deeper "ponk" of the male bird. The smooth liquid surface acting as a perfect conductor and sounding board, it appeared as though the call-notes of the birds originated at the water's edge at our feet. Hastening along we soon rounded the corner of the bay into the next. Off the point of land lay the island, with a strip of sand between, and further out a few scattered rocky outcrops with long lines of connecting reefs. On the still waters flocks of Black Swans (*Chenopsis atrata*), their red bills conspicuous against the black bodies, hundreds of Ducks (*Anas superciliosa* and *Nyroca australis*) and a few Silver Gulls (*Larus nova-hollandiæ*) fed or lazily preened their feathers in the welcome glow of the winter's afternoon sunshine. Upon the reefs, in silent contemplation or asleep, sat numberless Black and Pied Cormorants (*Phalacrocorax carbo* and *hypoleucus*), and on one particular eminence a family of Pelicans (*Pelecanus conspicillatus*) gravely conferred together. Beyond, the eye followed the stretch of blue sea to the coastline of the opposite shore, where the low-lying, scrub-covered sandhills intercepted the horizon. All was peaceful and quiet in this far-away bird sanctuary, and for many minutes we stood silently watching the scene. Then I fired the gun. In an instant the air was full of birds. They rose in a cloud, the white-tipped wings of the Swans flashing like streaks of lightning throughout the dark mass. For a few minutes the birds wheeled and circled in wild disorder, then, gathering in families, flew away in all directions till the neighbouring points of land and the distant hills hid them from view.

### Stray Feathers.

THE PAINTED FINCH IN NORTH QUEENSLAND.—Mr. F. C. Berney has sent for verification a skin of *Emblema picta*. It was secured about the middle of last July, at Homestead, by Mr. J. H. Smedley, who reported that he observed two or three small flocks—first two birds, then four, and then eight together. The Painted Finch has once previously been reported for North Queensland, having been seen in the Gulf country by Dr. W. Macgillivray. See "Nests and Eggs," p. 1082.—A. J. C.

THE WHITE-PLUMED HONEY-EATER AS A BEE-KILLER.—MR. W. M'Lellan, of this town, has some tree-lucerne plants, and just now they are in full bloom. Noticing a large number of dead bees on the ground, he examined them and found their bodies crushed. There were dozens of them. Very soon a solution of the cause of their death was arrived at, for he watched the "Greenies" or White-plumed Honey-eaters (*Ptilotis penicillata*) snap every bee that came to the blossoms. The birds simply gave the bees a crunch or two and dropped them.—E. A. D'OMBRAIN. Casterton, 4/9/05.

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EGGS OF THE EWING TIT (*Acanthiza ewingi*).—Although the eggs of this species have been described it may be of interest to record remarks about an authenticated clutch of two eggs in my collection, taken by the well-known Tasmanian ornithologist, Mr. E. D. Atkinson, on the 11th October, 1904, near Waratah, Tasmania. The eggs are inclined to be oval in shape, with fine texture of shell, and glossy in appearance. The ground colour is a warmish-white, and is finely freckled with reddish-brown, some spots appearing more indistinct than others, as if beneath the surface of the gloss: the spots are so thickly accumulated at the larger end that they form a blotch on the apex. A, measures .68 x .50 inch; B, .66 x .49 inch. The nest was dome-shaped, and typical of the *Acanthiza* family, and was placed in a small beech (*Fagus cunninghami*) which was growing in the bank of an old quarry.—J. W. MELLOR. Adelaide.

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SEAGULLS AS INSECT DESTROYERS.—During last harvest the crops, particularly those around Jan Juc, and further south of Geelong, were visited with the caterpillar pest. When the crops were ripe for cutting, these caterpillars would raid the farms and nip off the top of the crop, letting the ears of corn fall to the ground. Acres would be stripped in one evening by this pest. They seemed to commence their work just at sundown. A friend who related this to me, and who has a large farm, said the noise made by the caterpillars in nipping can be distinctly heard at some distance. One evening, on looking towards his crops, he saw hundreds of Seagulls (the ordinary white Gull, *Larus nova-hollandiæ*) enter his crop, and attack and devour these caterpillars. Next morning there was not a caterpillar to be seen. My friend told me other birds would not touch the caterpillars.—ARTHUR WILSON. Geelong, 25/7/05.

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NOTES ON BRONZE-WINGS.—When I wrote my notes on the Crested Pigeon (*Ocyphaps lobhotes*) for the April number of *The Emu* the hen was on her nest, having begun to sit for the last time on or about 3rd March, just as the final lot of the common Bronze-wings (*Phaps chalcoptera*) were out of the nest. Unfortunately I accidentally broke one of the eggs: however, as the weather soon became changeable and snowy, one was quite enough for the parents

to bring up well. They had begun a little earlier and finished up later than the other species.

This season has commenced considerably in advance of that of last year, as, to my surprise, I found yesterday, 26th June, two eggs in the nest of *Ocyphaps lophotes*, and one in that of *Phaps chalcoptera*: last year the dates were about 1st and 15th September respectively. The birds have been kept under exactly the same conditions, so the season, which has been extremely mild (almost total absence of frosts), must alone be accountable for them nesting so much earlier, I think.—MARY G. ROBERTS. Hobart, 27/6/05.

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KURRAJONG (Q.) NOTES.—The Grass-Birds (*Megalurus*) have almost totally disappeared. I saw one to-day, the first for some weeks. Hawks are unusually numerous this winter, although this locality is most noticeable for their absence at other times. Goshawks (*Astur approximans*) were in evidence some time ago, terrorizing the poultry everywhere, but now there have been none molesting them for some weeks. The other species I have noticed are—Brown Hawks, very numerous; Spotted Harriers are to be seen on any of the little black-soil plains; Kestrels, Black-shouldered Kites, Little Eagles, Little Falcons, and Sparrow-Hawks are also to be seen, though not plentiful. Eagles are also more numerous than I have seen them before. We have had some visitors, in the shape of tiny greenish Parrakeets (Warbling Grass-Parrakeets); they were very wild, and were either in pairs or small parties of five or six. Red-capped Robins have put in an appearance, one or two pairs being seen. Although it has been very dry for some months, the Scrub-Turkeys (*Talegallus*) would vie in condition with any domestic fowls. Some of them are almost too fat to eat.—ERNEST D. BARNARD. 23/6/05.

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TASMANIAN HAWK-NOTES. — Ament Harriers (*Circus gouldi*) settling on trees, I have had good opportunities of watching them, and have seen them many times settle on a dead tree, near their hawking grounds, and also, at the nesting time, have seen the male perch on the tree and wait there for the female, while the latter was placing material in the nest, which was in a crop close by. White-fronted Falcon (*Falco frontalis*).—On a very hot, sultry evening, about the New Year, I noticed one of these birds near me feeding on what I concluded were the common black beetles, which were then very numerous. This bird would settle on the branch of a dead tree and there watch for one or more of these beetles to come along, then with one or two flaps of its wings would dart upwards, downwards, or at an angle, and take its prey, sometimes taking more than one in a flight, and always returning to the same perch. It was very interesting to watch its performance, but I failed in one thing, through being afraid to venture too near, and that was to ascertain if the prey were taken in the mouth or claws, but I



fancy at times I could see them taken in the claws—it may have been when one was secured in the mouth first. I noticed also that when the bird returned to the tree its head invariably went down to its claws, as if it were feeding on them while holding them down.—ARTHUR E. BRENT. South Bridgewater (Tas.), 21/7.05.

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ROCKHAMPTON (Q.) NOTES.—The winter in Queensland has been long and trying. The cold has been intense for this part of the country—below the freezing point on many nights in July. The rainfall here has been—May, 1.01; June, 0.56; July, 0.45. Pastures have become burned up, and in the absence of blossoms one wonders how honey-eating birds find food. Lagoons and waterholes have not fallen so low as might have been expected, and waterfowl have not been stinted for food. Still they have not recovered so quickly from the effects of the prolonged drought as some other kinds—Quail, for instance, appear to have been breeding incessantly, and are numerous all over the country. Cranes and Herons, too, are common again, and Ibises come into the precincts of the municipality. Flocks of Finches of various kinds are to be seen at times. There was an influx of strangers in the cold, dry weather of July, driven hither probably by the cold, stormy weather which then prevailed in the southern States. Cuckoos were noticeable among them. One evening a cluster of little birds about the size of Sparrows were observed going to roost on the lee side of a scaly-bark araucaria tree in a garden on Athelstane Range, within sound of the city clock bell. They crowded together like a hive of bees. In the morning they were hopping about the adjacent pasture, but soon disappeared and did not return. What were they? They were conirostres of some kind; ash and white were the predominating colours in their plumage, and the tail feathers had lovely white scallops at the extremities. The Kestrel has been coming and going; Kites are not nearly so plentiful as they used to be. The Pied Crow-Shrike, which was a common and agreeable winter visitant before the great drought, has not been here for three seasons now. The little grey Doves, which are always with us, became very tame in the cold weather. They discovered where Canary seed was to be obtained, and boldly lit on the verandah, where the singing birds had scattered it from their cages. Becoming familiar, four were seen at one time perched on a cage, and by turns robbing the seed-box. Magpie-Larks are unusually plentiful. During the day they forage about the lagoons on the west side of the range, but are careful to seek shelter in the bamboos on the east side from the cold westerly winds at night. Their home-coming reminded your correspondent of the return of boats from mackerel fishing in the Firth of Clyde. Bee-eaters are very troublesome. They sit on the fence opposite hives, and, as the bees are very not smart in the cold weather, snap them up without difficulty. It is when they are sitting on the fence, rapping the bee to kill it outright, that the bee-man makes a stone whizz pass the offenders. They are

making preparations for nest-boring in the sandy soil of the Botanic Garden. The Black-faced Cuckoo-Shrike is to be seen feeding on the fruit of the native fig-tree under the shadow of the post-office tower in East-street. Bronze-wing Pigeons are abundant all round the town—visitors from dry country.—A.O.U. 21/8/05.

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*Re FANTAIL CUCKOO.*—I notice Mr. Barrett, in *The Emu*,\* mentions finding addled eggs in nests. My experiences have been the same, which can easily be accounted for, at least as far as Tasmania is concerned. Cuckoos arrive here in August, the month in which most of our small birds build (at least most foster birds to the Cuckoo). Very likely this is so arranged in order for them to be ready for the Cuckoos' eggs, which would then be ready for placing in the nest. But down come a fall of snow and rough weather, lasting some weeks, putting the builders off for at least a month; therefore the eggs of the Cuckoo are placed in the nest, *very, very* often before the nests are completed, and if it should happen to be put into a *Sericornis*' or *Brown Acanthiza*'s the birds will at once leave the nest. These little fellows seem to be able to detect any little disturbance that may be caused by putting one's finger in the nest before any eggs are laid, and therefore when doing so one wants to be very careful. I once found a nest of the *Brown Acanthiza* by seeing it chasing the Cuckoo away and flying back to the nest. I carefully felt one egg and left, thinking to go back later and get the Cuckoo's egg. I returned three times, saw the birds there, felt carefully—only one egg. I fancied the third time something was amiss, so took out the egg, which proved to be the egg of the Fantailed Cuckoo—this was my first experience. While packing the egg away I noticed the *Acanthizas* darting about, so sat and watched, to see if they went back to the nest, but to my surprise I saw one with material, and discovered another nest only two yards away, nearly built. After waiting a week I went to the spot again and took another Cuckoo's egg (with two of the *Acanthiza*), which proved to be exactly similar to the other. (Query—Do Cuckoos lay more than one egg? My answer is decidedly yes.) While on the subject of Cuckoos, I might say that my notes appearing in *The Emu* re the Pallid Cuckoo were based on my own actual knowledge, obtained through constant watching, but I have never seen them perform at the age of 30 or even 48 hours. It would be impossible for them to eject a young bird from the nest of our Yellow-throated Honey-eater, or Black Cap, at that age, on account of the depth of the nest. I have found them in the nest of the Black Cap, and as soon as you touch them they commence to jostle the other occupants and try to throw them out. I have seen them do so at times, and have caught them in my hand and placed them again in the nest, to see the same performance go on.—ARTHUR E. BRENT. South Bridgewater (Tas.), 21/7/05.

\* Vol. v, p. 21.

JOTTINGS FROM TASMANIA.—9th June, 1905.—With regard to the stay of the Flame-breasted Robin (*Petroica phoenicea*) in cold latitudes during the winter months, the following observation was recently made:—While walking with a friend up the hill leading to the Don, we saw nearly thirty Robins grouped together on the electric light wire and on the fence below. One pair belonged to the Scarlet-breasted species (*P. leggii*); the others were all Flame-breasts, only about 25 per cent., however, being in full plumage, the grey tints of the remainder showing them to be either females or immature males. The hen of *P. leggii* was easily distinguishable, owing to the light red patch upon her breast, this being absent in the others. It was very pretty to see how the males in full plumage of *P. phoenicea* shone out like small live flames in the long row upon the fence, the females and younger individuals being all but invisible on the grey timber under a grey sky. This took place on 5th June.

Some Fan-tailed Cuckoos (*Cacomantis flabelliformis*) stayed with us very late this autumn; their rippling notes were heard upon the Mersey banks during the sunny afternoons of the last three weeks in April; one in a blue gum in Devonport town on 10th May; finally, one was seen at the Don River enjoying the genial sunshine of 21st May. I have a record of this species having been seen last winter at the Mersey Bluff on 16th July! This hardy bird was sustaining the assaults of a Shrike-Thrush with apparent serenity. "Summer-Bird" (*Graucalus parvirostris*).—Four of these graceful birds flew over my cottage on 12th May, keeping fairly high, and heading to the north-east. They uttered as they flew their peculiar rapid wiry notes. Pipit (*Anthus australis*).—Can members shed any light on the movements of this bird? They appear to move hence early in April, and reappear during the first or second week of September. Are they migratory or merely nomadic? An observer some time ago assured me he had seen them in the midlands of Tasmania during the winter months. The winters are more frosty and severe there than here on the coast, so one does not see how they would benefit by the change, unless they obtain insects in the neighbourhood of the sheep, of which large flocks are kept in the midlands.

12th June.—Three Swallows (*Hirundo neoxena*) were observed in Charles-street, Launceston, by Mr. H. C. Thompson during the first fortnight of June; they appeared weak, and kept under shelter of the shop verandahs. Mr. Thompson observed one taking its food in a way that is uncommon among Swallows—viz., clinging to the sash bar of a shop window and picking flies from the glass.

14th June.—A pair of fine Pelicans (*Pelecanus conspicillatus*) was seen sitting upon a sandbank in the Mersey River, the first I have ever seen upon this coast of Tasmania. What an everlasting disgrace that these fine birds, and also the splendid Black Swan, should not be protected throughout the year; if that were done we should be delighted with the spectacle of numbers of them sailing continually on our waters, instead of, as now, an occasional

specimen, here to-day—and shot or (if fortunate) flown away to-morrow.

18th June.—The much-talked-of Starling (European) has begun to colonise Devonport; three pairs were seen on the summit of a dry tree this afternoon on the east bank of the Mersey. Their whistling call, with a peculiarly plaintive finish, first attracted our attention. At first we took the note to be a rather unusual call of the Dusky Robin (*P. vittata*) or "Sad-Bird," but eventually located the true whistlers.

25th June.—Two pairs of Flame-breasted Robins (*P. phoenicea*), the males in bright plumage, were noticed in a grass paddock near the sea, showing that some, at any rate, of these lovely birds remain with us during winter.

26th June.—A male Flame-breasted Robin, in fine plumage, sitting on electric light wire, uttered his plaintive little song of six or seven notes. The Brown-tails (*Acanthiza diemenensis*) were also heard uttering their sweet little mating-call, as if about to pair. Of all our small birds this seems to me to have the most wild sweetness in its call.

30th June.—A "Summer-Bird" (*G. parvirostris*) was seen in the pine trees of Dr. Payne's garden.

2nd July.—Another warm-weather bird was noticed to-day—that is, in midwinter. This was a Fan-tailed Cuckoo (*C. flabelliformis*) sitting near the Bluff Lighthouse, and facing a strong westerly breeze as if rather enjoying it.

3rd July.—A male Long-tailed Blue Wren (*Malurus gouldi*), in full plumage, accompanied by three sober-coloured friends, seen to-day on east bank of the Mersey; also a Grey-tailed Thickhead (*Pachycephala glaucura*), without colour, picking insects from the bushes.

4th July.—Flame-breasted Robin in full plumage noted in Fenton-street.

14th July.—A Little Penguin (*Eudyptula minor*) was disturbed among the rocks on the beach; it made for the sea, running awkwardly in a horizontal position, and much resembling a bandicoot at a short distance. It used its flippers alternately on the rocks to prevent itself stumbling forward on its face. When exhausted it crouched down between two diorite rocks with rounded tops, and with its own dark blue rounded back was almost impossible to distinguish.

18th July.—Another Flame-breasted Robin in full plumage noted to-day; also a Fan-tailed Cuckoo flying near the beach and a "Summer-Bird" calling among the pines.—H. STUART DOVE, West Devonport.

NEW EGG-BLOWER.—*The Condor* for July describes a new kind of egg-blower and cleaner invented by Mr. W. L. Colvin, of Osawatomic, Kansas, by which it is said eggs may be blown six times faster than with the mouth. The principle is that of the syringe.

## From Magazines, &amp;c.

AUSTRALIAN FINCHES.—Mr. J. B. Housden, of Brooklyn, Cator-road, Sydenham (England), informs us that he has flying in his aviaries twelve hundred Australian Finches, consisting chiefly of Red- and Black-headed Gouldians, Star-Finches (*Bathilda ruficauda*), Long-tailed, Pectoral, Masked, and Bichenos.—*Avicultural Magazine* (July, 1905), p. 293.

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THE GREAT AUK.—*The Auk*, in its July number, has a photo. of a specimen of the extinct species from which the paper takes its name, and another of two of the eggs. Bird and eggs were recently acquired by Mr. John E. Thayer, who describes them, at prices which are not stated; we are told, however, that the eggs formed part of a lot of ten sold in London in 1865 at prices varying from £29 to £33 each. The bird belonged to Gould as long ago as 1838.

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THE discovery of the eggs of the Knot (*Tringa canutus*), which is a summer visitor to Australia, is reported in the *Ornithologisches Jahrbuch* (Jan.—April, 1905). The clutch of four eggs was taken 17th June, 1898, on an island called Hrisey, to the north of Iceland. In coloration the eggs resemble those of the common European species (*T. alpina*), but they are larger than the latter. The collector who made the find had looked for the eggs of this species for more than twenty years in vain.

The same issue has a note on the occurrence of Richardson Skua (*Stercorarius crepidatus*) in Hungary. This is another species that comes to us in summer, when it may be seen following in the wake of steamers in Port Phillip Bay. It is easily identifiable by its central pair of tail feathers, which stick out prominently beyond the rest and run to a sharp point.

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THE ALEXANDRA PARRAKEET.—Mr. G. A. Keartland has contributed some interesting details on the "range" of this beautiful Parrakeet in *The Victorian Naturalist*, vol. xxii., No. 5 (September), from the time it was first discovered, over 40 years ago, at Howell's Ponds, in the far North, till recently, when it was found breeding in South Australia proper, within 80 miles of Oodnadatta. The extension of the range to Western Australia was recorded in *The Emu*, vol. iii., p. 115 (1903). In this instance, two or three young birds were brought alive to Melbourne from the West by Mr. Hunter. One has developed into a handsome male, and has easily taken the prize in its class at all the recent shows. Mr. Hunter has liberated his Alexandra Parrakeets in a roomy aviary, in the hope that they will breed. Mr. Keartland has, inadvertently, no doubt, given *North* instead of *Gould* for the authority of the species *Polytelis* (*Spathopterus*) *alexandra*. But the former naturalist has attempted to change the original generic name into *Spathopterus* on account of the notch at the end of the third primaries of the wings.

This feature is only specific at least, for, in other respects—general contour, shape of head, long tapering tail, &c.—the Alexandra Parrakeet resembles the Green-Leek (*Polytelis barrabandi*) and Black-tailed Parrakeets (*P. melanura*). The Rev. Hubert D. Astley, M.B.O.U., writing to *The Avicultural Magazine* (June) in reference to some Alexandra Parrakeets which he has in captivity, states:—"I wonder why, just because a bird happens to grow a peculiar-shaped feather in the wing, it should be given a separate name? The Princess of Wales Parrakeet is evidently of the same group as the Barraband (*Polytelis barrabandi*) and the Rock-Pebbler (*P. melanura*). Because one brother or cousin in a family has a snub nose, and another a Roman nose, it does not make him of a different genus!"

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SAVE THE PENGUINS.—According to *The Times* (weekly edition) a vigorous, if not heated, debate followed the motion brought forward by the Hon. Walter Rothschild at the Ornithological Congress held in London. Speaking, he said, as an exponent of the wish of the bulk of the Congress, he moved—"That a telegram be sent to the Government of New Zealand and Legislature of Tasmania, urging them to introduce legislation to prevent, in islands under their rule, the destruction of Penguins now going on for the sake of boiling the birds down into oil." Numbers of members spoke in support. Sir W. Buller (who is writing a book on the subject) and Dr. Giglioli spoke with especial vehemence; and one of the delegates from the Australian Ornithologists' Union, after announcing that the Legislature of Tasmania had recently put the Penguin on the total protection list, said that such a telegram would strengthen his hands. He also gave some terrible details of the torture of Mutton-Birds (Petrels). At this point a vigorous protest was made by M. Leonhard Stejneger, from the United States, on the ground that the Congress had no business to dictate to Governments, and he instanced the hypothetical feelings of the American Government if so schooled. Dr. Bowdler Sharpe replied that if the Americans were boiling down Penguins in the Philippines and the Congress did not tell them to stop the Congress had better cease to exist. Finally the motion was enlarged by including "the Commonwealth of Australia" and the substitution of "all birds boiled down for oil" for Penguins, and passed with the one dissident.

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FAR SOUTHERN SEAS.—At the International Ornithological Congress recently held in London Mr. W. S. Bruce's account of the Scottish Antarctic Expedition proved, according to *The Times* (weekly edition, 23/6/05), much the most remarkable address given during the Congress. The Scotch brought back a considerably richer collection than any of the three other expeditions—a success which Mr. Bruce attributed chiefly to the excellent shooting of Mr. D. W. Wilton. Directly a possibly rare bird was seen a boat was lowered, and, in spite of rough seas and considerable danger, Mr.

Wilton was generally successful. The expedition also had the advantage of the others in wintering on the South Orkneys, where many specimens were secured, as also off Coat-land. Altogether over 500 skins were brought home. The expedition, which started from the Falklands, reached as far south as 74°. Perhaps the chief success was in finding eggs which hitherto have been seldom seen—for instance, those of the Snowy Petrel, the Sheath-bill, the Blue-eyed Cormorant, &c. The prime success was Mr. Bruce's discovery of a rookery of Cape Petrels (*Daption capensis*), a well-known Australian and widely-distributed species, of which the eggs had never before been found. Two entirely new species were procured in the Gough Islands, both Buntings, very different from known species. They were named the *Nisospiza jessiae* and *N. goughensis*. About one, which has a resemblance to the "Mollymauk," no one has yet come to a decision. It is not the same as any known specimen, and Mr. Walter Rothschild and Dr. Hartert are still trying to place it.

Dr. Wilson, of the *Discovery* (National Antarctic, 1901-4) Expedition, also contributed an important bird-paper to the Congress on South Polar species. He found the great Emperor Penguin bred there during August, the period of greatest cold and complete darkness, when the thermometer was often 100 deg. below zero. The Emperor Penguin is a true ice-bird, never being found north of the front of the great ice barrier.

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FRUIT-EATING BIRDS.—In *The Journal of Agriculture*, Victoria (part 5, vol. iii.), Mr. Charles French, jun., Assistant Government Entomologist, contributes an important article on "Fruit-eating Birds."

The article, in the first place, was written for the recent Nature Study Exhibition, Geelong, and gained *The Age* special prize. The paper cannot fail to be of value and interest to the orchardist, viti-culturist, and others. Mr. French enumerates 24 indigenous species of birds as destructive to fruit, and, naturalist-like, he treats them systematically by vernacular names, classical names, geographical distribution, and breeding season, each species ending with brief general remarks about food, &c. Probably there is a technical error about the "Black Magpie." *Strepera fuliginosa* has been written instead of *S. graculina*. The latter fine bird ranges from Queensland round to South Australia, but is not found in Tasmania. And, according to recent authorities, the King Lory (*Aprosmictus cyanopygius*) is not found in South Australia, while the elegant swift-flying Lorikeet (*Nanodes discolor*) ranges into Queensland. Of course these are items of interest to the zoogeographer, but the practical man will be more concerned with the food, habits, &c., of the birds.

Although the birds mentioned are a trifle destructive to fruit during the season (the rest of the year they are almost wholly insectivorous), Mr. French would not like to see such beautiful

creatures destroyed because of their petty depredations. Even the much-abused Crow or Raven, taking it all the year round, has been proved to be a farmer's friend more than an enemy, and the graceful and merry Spiny-cheeked Honey-eater is only seen about metropolitan gardens in winter time, departing inland for its breeding haunts during the harvest season. Were the introduced birds destructive to fruit—the Minal, Sparrow, Starling, and Blackbird—mentioned at the end of Mr. French's paper wiped off the face of the land, there need be no fear from any native birds.

\* \* \*

THE AIMS OF ORNITHOLOGY.—Letters from prominent ornithologists on "The Future Problems and Aims of Ornithology" are published in *The Condor* for May-June and July-August. Dr. A. R. Wallace says that instinct and heredity are the departments of biology in which most remains to be done. Dr. L. Stejneger deplors the mass of unscientific ornithological literature, which from its lack of arrangement is not even useful as a source for the supply of facts to the scientist. Nearly all the work must be done over again, and in an entirely different manner, according to plan and system and with definite objects in view. An ornithologist must be a biologist as well. He may specialize, but on scientific lines. The mere classifier and describer will soon be distanced. Birds are to be studied in the light of other sciences, such as geography and physiography, and in the light of study of other animals and plants. The ornithologist must study under competent teachers, and at first be guided by them. The time of the autodidact, the self-taught man, says Dr. Stejneger, is past. The ornithologist must study both in field and cabinet. For qualifications, he must have a knowledge of biology, general zoology, geology, and physiography. He must gain detailed knowledge of species by patient work in the study, and power of observation by training in the field. Then he can start to specialize and study various problems under proper guidance. The man of science has not to seek these problems; they grip him by the throat and demand solution. If these seem to be counsels of perfection, we must remember that Dr. Stejneger's point of view is that of the man who makes ornithology his life-work. He is not addressing the amateur, though, as he says, he is not "down" on him. It is the amateur who poses as a scientific ornithologist without having the true scientific instinct who is the nuisance, according to Dr. Stejneger. Dr. P. L. Sclater says there is much work to be done in the branches of anatomy and pterylography, in which there are few workers at present. Mr. William Brewster thinks with Dr. Stejneger that the problem concerning the interrelation of bird with other animal life is the one best worth attention. That is to say, we should study the "balance of nature" and how it is maintained. Bird-migration is another problem far from being exhausted. To the young ornithologist he says:—"Study carefully the birds in the immediate neighbourhood of your home, limiting yourself to a definite area." To become an



efficient ornithologist one must use the gun, but if the young man wishes merely to divert himself by the study of birds, or to make their study simply an excuse for leading an out-of-door life, the opera glass, not the gun, is the implement best suited to his use.

\* \* \*

CUCKOOS.—Sixty pages of the *Proceedings of the Ornithological Society of Bavaria* (1903, vol. iv., New Series, vol. i.) are occupied by observations on the European Cuckoo (*Cuculus canorus*) by the late Johann Andreas Link. The author has devoted the leisure of forty years to the study of this species, and his statements may claim some weight. The European Cuckoo is a congener of our familiar Pallid Cuckoo (*C. pallidus*), also of the Fan-tailed Cuckoo (*Cacomantis flabelliformis*), and in view of the interest lately taken in the study of Australian Cuckoos, and the probability that what is true of the habits of *C. canorus* will be found to be true also of its local representatives, it may be worth while to see what the author has to say about the European bird. His conclusions may be summed up thus:—The Cuckoo finds foster-nests by the eye and by noticing small birds building. It visits the nests before it is ready to lay, and remembers where they are. The egg is deposited by means of the bill when the nest allows of no other way, and it chooses nests of the latter kind even in preference to ones it could easily sit on. Most of the nests frequented by the Cuckoo are more suited in point of construction and situation for bill-depositing than for direct laying; indeed, in most of the preferred nests bill-depositing is the only method possible. Therefore it may be said the Cuckoo deliberately chooses the indirect way in most cases, even when the possibility of direct laying is not excluded. Bill-depositing is therefore the normal way for the Cuckoo. The female usually finds nest and deposits egg alone; if the male does ever accompany her it is from motives of jealousy only. The breeding season lasts as long as the bird calls—70 days on an average. The female arrives 8 or 10 days later than male. The first egg is laid 20–25 days after first call heard. The Cuckoo lays about eight eggs in a season, with about 6 days interval between each. This length of interval may account for the bird not hatching its own eggs. One is the normal number of the Cuckoo's eggs for one nest. If there are more, it means suitable nests are scarce in proportion to the Cuckoos looking for them. The same Cuckoo may sometimes lay two eggs in the same nest. Three eggs in a nest is the record. The Cuckoo chooses the species that has reared it. A nest with one Cuckoo's egg first laid is usually deserted by the nest birds. Exceptionally a Cuckoo's egg is found with a full clutch of the foster-parent's; here the Cuckoo has laid first. If it has time to do it, the Cuckoo usually removes one or more foster-bird's eggs when laying its own. It usually lays in nests containing fresh eggs, but sometimes by error in sleeping or play nests. After the young Cuckoo is hatched the old female Cuckoo visits the nest and removes the other eggs or young, as the case may be; if she

is prevented from visiting the nest the young Cuckoo throws out the other young, but not the eggs. It gets under the other young, loads them on to its back, which has a special hollow at the earliest period of its life-history, and throws them backwards, lifting them to the edge of the nest and out over it. The young Cuckoo cannot do this till it is 3 or 4 days old. At 12 days the hollow in its back and the desire to throw out the other young birds disappear together. The young Cuckoo is usually found alone in the nest a short time after hatching. The exceptions are—(a) When the Cuckoo's egg is laid last and hatched after the other young; (b) in the case of nests in hollows, where it is impossible for the young Cuckoo to throw the other inmates out. If there are two young Cuckoos hatched in the same nest one throws the other out. The Cuckoo has as much maternal love as any other bird, evidenced as follows:—"As soon as the female Cuckoo has found a suitable nest to deposit its egg in, and the egg is ripe for laying, it removes one or more of the eggs in the nest and puts its own egg there. This action is proof of the first exercise of care for her offspring on the part of the female Cuckoo, since the intention is to make room for the proper incubation of the Cuckoo's egg. Before incubation is complete the female Cuckoo appears again to see whether her egg has been hatched. If it has, she removes everything from the nest but her own egg. She throws the foster-bird's eggs out and leaves them almost always near or under the nest. She proceeds in a similar way with the nestlings, but removes them with greater care, with the result that the little birds are to be found at first near the nest, soon afterwards further away, and finally not at all. In my opinion the reason for this difference in the treatment of eggs and young lies in this—that the eggs, being motionless, do not draw the attention of the female Cuckoo upon themselves any further, but the little birds, by moving after being thrown out, awaken the suspicion in the female Cuckoo's mind that they may be able to get up and creep back into the nest again. This action proves great care—indeed, motherly love—which is the more striking when we reflect that the mother has not to concern herself with one child only but with a whole series of them, so must devote similar care to each egg that she lays."

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### Reviews.

AT least as important to the student of ornithology as a minute acquaintance with the birds of his own country is a working knowledge of the relations in which those birds stand to the Ornis of adjacent regions and the rest of the world, so that Australasian bird-lovers should read with interest and profit the lengthy presidential address of Col. W. V. Legge, F.Z.S., delivered 7th January, 1904, at Dunedin, before the Biology Section of the Australasian Association for the Advancement of Science, which now appears in print in the form of an extract from the "Transactions" of that

Association (By authority: John Mackay, Government Printer, Wellington, 1905, 68 pp.) The title of the address is "The Zoogeographical Relations of the Ornis of the Various Sub-Regions of the 'Australian Region,' with the Geographical Distribution of the Principal Genera Therein."

The "Australian Region" is that so classified by Dr. A. R. Wallace in his work on "The Distribution of Animals." It includes four sub-regions—Australasia (Australia and Tasmania), Austro-Malaya (New Guinea, &c.), Polynesia, and New Zealand. The first part of the address is a description of each of these four sub-regions ornithologically considered. Each has, as is shown, its specialized forms—Australasia its Lyre-Birds, Mound-raisers, Emus, and Plain-Wanderer; Austro-Malaya its Birds of Paradise, Crowned Pigeons, and Long-tailed Kingfishers; Polynesia the strange Pigeon (*Gnathodon*), of Samoa, and the Kagu (*Rhinocetus*), of New Caledonia\*; New Zealand its peculiar Starling (*Heteralocha*), aberrant Pitta (*Xenicus*), Sheep-killing Parrot (*Nestor*), and the Kiwi (*Apteryx*).

New Guinea is the focus of the Austro-Malayan sub-region. Oriental elements enter in Celebes and Timor, each of which forms, as it were, the arresting point for many Indian, Indo-Chinese, and Indo-Malayan forms on their way towards Australia; but Celebes, in spite of its peculiarities, has greater affinity with our own region than with the Oriental, hence we find it included by Wallace in the former. The dividing line is not so arbitrary as it looks in the map, for the strait between Bali and Lombok, through which the line of severance between the Oriental and Austro-Malayan regions runs, is very deep, and forms a real natural division.

New Guinea's relation to Australia is closest in the Passeriform birds, naturally enough, as that is the largest order, but it would be still closer were it not that our tropical vegetation in the north is confined to but a small area. Australia once stretched out nearer the island of Timor than it does now, and the existing relationship is to be attributed to that time, for now the broad Arafura Sea rolls between and stops Oriental forms coming on from Timor to us.

Colonel Legge divides the Polynesian sub-region into five groups—(1) New Caledonia and neighbouring islands; (2) Fiji and Samoa; (3) the Societies, Marquesas, and Low Archipelago; (4) the Carolines, Marshalls, and Ladrões; (5) the Sandwich Islands;

\* It is a popular error to suppose that the Kagu is nocturnal in its habits. Mr. H. E. Finckh, of Sydney, in writing to the editors regarding his birds in captivity, states:—"My four Kagus go to roost as soon as it is dark, not at dusk. Between dusk and dark they eat up any scraps of meat which may be about, which proves that they look for their food when the worms come out at the evening. Strange to say, their egg is also always laid just when the dusk has changed into night. They sleep very soundly. I often go into their run at night; they never wake then, unless disturbed, and I have often been surprised that they do not wake easier. I have even removed their egg from under the sleeping bird without awaking the latter. I have never found my birds about at night, and I always give them a final look before I retire myself. I also frequently find them asleep early in the mornings, should I happen to be up just before daybreak, and even the brightest moonlight nights do not alter matters."

and shows the relation of each group to the others and of the sub-region as a whole to its neighbours.

The carinate Ornis of the Australasian sub-region is analyzed more closely, and divided into four series of genera, namely—

1. Genera peculiar to Australia.
2. Typical Australian genera extending more or less into adjoining sub-regions.
3. Typical Austro-Malayan genera represented by species in Australia.
4. Wide-ranging genera penetrating to Australia through Malaya, some being exclusively Oriental.

The fourth sub-region, New Zealand (including Lord Howe and Norfolk Islands), is shown to be remarkable for the number of its specialized forms and its generally aberrant Ornis. Colonel Legge suggests that the present distribution of the Struthious birds, which range from South America (*Rhea*) through New Zealand (*Apteryx*) to Australia and Austro-Malaya (Emu and Cassowary), points to a former land connection over the whole area, a conclusion to which he is also assisted by the likeness in habits between *Stringops* (Owl-Parrot) of New Zealand and *Rhinochetus* (Kagu) of New Caledonia, though the birds in question are of widely different orders. The former existence of the Moa there would indicate that New Zealand was the central point from which the Struthious birds spread to Australia on one side and South America on the other.

*En passant*, the efforts of the New Zealand Government towards preservation of diminishing species are commended.

The second and longer part of the address deals with the geographical distribution of families and genera in the Australian Region. Land birds only, including as such the *Herodiones* (Hérons), *Alectorides* (Cranes, &c.), and *Fulcarie* (Coots and Rails), are dealt with, since the *Limicolæ* (Plovers, &c.), *Anseres* (Ducks and Geese), and *Steganopodes* (Cormorants, &c.), being in the main birds of the littoral and of coastal waters, are of no help in determining the ornithological relationships of land areas.

The scope of this, as viewed by the author, can only be indicated here and there, and where it chiefly concerns the species of the Australasian Sub-region. Taken in conjunction with its large area, Australia contains few birds of prey. The number of species of diurnal *Accipitres* is 28, and that of nocturnal *Striges* only 14. In comparison with these small totals the numbers in limited areas in other parts of the world may be cited, such as Ceylon with 32 *Falcones* and 12 *Striges*; Britain with 24 of the former and 10 of the latter; and if we compare the Indian Sub-region, with its 60 diurnal birds of prey, our Australian list is small indeed. One notes that the most recent addition to our *Accipitres* is *Butastur teesa*, said to occur sporadically in New South Wales.

It is the great order of Perching-Birds, the members of which far outnumber those of any other order, through which the relations

of the Australasian Ornis are better established with those of the adjacent sub-regions than through other orders.

Of the family of Drongos there is one Australasian species, *Chibia bracteata*. *Chibia* is a genus which is almost purely Austro-Malayan, six out of the nine known species inhabiting that sub-region. In the family of Wood-Shrikes, the Magpie-Larks (*Grallina*) connects New Guinea and Australia, as a congener—*G. bruijni*—of our well-known bird inhabits the mountains in Papua. The Shrike-Thrushes (*Collyriocincla*) are almost exclusively Australasian, one—*C. brunnea*—only straying to New Guinea. The allied genus (*Pinarolestes*) has, however, a wider range—from Australasia to Austro-Malaya and Polynesia, where seven species and sub-species are found. As Australasia has only three species, the genus is chiefly Polynesian. Regarding the Cuckoo-Shrikes, which are mainly distributed from India to Eastern Papuasia, there are two small genera, *Pteropodocys* and *Campochara*, confined to Australasia and New Guinea respectively. They are followed in the arrangement by *Graucalus*, with many species strongly located in the Austro-Malayan region and fairly so in Australasia.

The genera *Gerygone*, *Arses*, *Macharorhynchus*, *Micræca*, *Pacilodryas*, and *Malurus* are all common to Australasia and Austro-Malaya. Out of the many known species of the last-mentioned, all are restricted to Australia save one—*M. albiscapulatus* of New Guinea. A characteristic feature of the Australian Ornis is the scanty distribution of the Thrushes (*Turdidæ*) within the region. There are, however, three or four species of Ground-Thrushes (*Geocichla*) in the Australasian Sub-region. It is not till we come to the sub-family *Ptilonorhynchinæ* (Bower-Birds) that we meet with Australian representation in the Timeliidæ. Five genera of these remarkable birds are Australasian, two of them being also found in Papuasia, while an additional one is exclusively Papuan. The *Ephthianura* deserves passing notice. These little Chats form one of the typical groups of smaller birds highly characteristic of Australia. They live upon the ground and are insectivorous, and, according to Colonel Legge, have no affinity in habits and mode of life to the other birds in the group in which they have been placed by systematists.

In his interesting remarks in reference to the dispersion of the Tree-creepers and Nuthatches, the author comes to our Australian Creeper, *Climacteris*, of which several species are found on the continent. As *C. rufa* has generally been considered to be purely Australian, it would be interesting to have Colonel Legge's authority for the statement that it has wandered north to the Philippines. The *Meliphagidæ*, or honey-loving birds, taken in their natural sequence, occupy many very instructive pages of the address. An Asiatic Swallow (*Hirundo gutturalis*) is mentioned as a straggler to Northern Australia. The Wood-Swallows (*Artamus*), which are a most puzzling form of birds, are almost wholly Australasian, two species only having ranged outwards to Indo-Malaya and the Indian and Indo-Chinese Sub-regions of the Oriental Region. In

the *Atrichidæ* (Scrub-Birds) and *Menuridæ* (Lyre-Birds) there are two remarkable specialized Australasian forms.

No Australasian form is more widely found in Polynesia than the familiar *Halcyon*.

It is extremely interesting to find that the European Cuckoo ranges as near to us as Timor, whilst its Asiatic prototype, *C. intermedius*, visits the northern parts of Australia. The genus *Cacomantis* (short-winged, typical Cuckoos) is a Malayan and Papuan form, extending on the one hand to India and on the other to Fiji. In Australasia there are three species. The focus of the pretty little Bronze-Cuckoos (*Chalcococcyx*) is New Guinea.

Of the perplexing Plain-Wanderer (*Pedionomus*) Colonel Legge says that its dissimilar habits and Limicoline eggs almost warrant its separation from the *Turnicidæ* and placing in a separate family, *Pedionomidæ*. And by parity of reasoning might not the genus *Zosterops*, with its 86 species, be removed from the *Meliphagidæ*, from which it exhibits so many points of difference?

In the order *Fulicariæ*, which is full of fascinating interest, the *Rallidæ* are fairly represented in Australia. Regarding the stray Native-Hen (*Microtribonyx*) being procured at sea between Tasmania and the Auckland Islands, may it not have escaped from ship-board?

The conclusions at which Colonel Legge arrives from his consideration of the geographical distribution of species in the Australian Region are as follow:—

" 1. Australasian and Austro-Malayan are the most closely allied sub-regions. The typical families showing this alliance are *Meliphagidæ*, *Muscicapidæ*, *Campophagidæ*, *Laniidæ*, *Pittidæ*, *Loriidæ*, *Megapodidæ*, *Ardeidæ*.

" 2. The relations between Australia and Polynesia are mainly through *Meliphagidæ*, *Muscicapidæ*, *Laniidæ*.

" 3. Between Austro-Malaya and Polynesia we find affinity through the *Meliphagidæ*, *Muscicapidæ*, *Loriidæ*, *Peristeridæ*, *Treronidæ*.

" 4. Between Polynesia and New Zealand through the genera *Rhipidura*, *Cyanorhamphus*, *Urodynamis*, *Notophox*.

" 5. Between New Zealand and Australia through the genera *Rhipidura*, *Pseudogerygone*, *Zosterops* (doubtful).

" In the foregoing I have not included certain genera of wide range, species of which are found throughout the various subdivisions of the Australian Region."

It is to be regretted that Wallace did not choose a wider name than "Australian" for the whole region. One has got used to considering Australasia as including Australia, and when the process has to be reversed it means a pitfall for the unwary ornithologist.

Some errors have appeared in Col. Legge's paper, owing, as the author explains, to his not having been furnished with proofs in due time. He had not time to make necessary corrections, and did not see a proof of his map. Hence inaccuracies have occurred which the author deeply regrets. Thus "Australian" is given as

the title of the Australasian Sub-region in this map, and on page 218, by some misunderstanding, the titles are transposed. Again, the omission of the Order *Picariæ* preceding the genus *Syma*, and the misplacing the genus *Heteromyias* among the Shrike-Tits on page 225, have been unfortunate, as also the misprint "*Geopsittacus*," for *Necopsittacus*, page 269, and the habitat "south" instead of north for *Acyone pusilla* and *A. pulchra*, page 263.

But Col. Legge's work deserves to have a much greater publicity than it is likely to obtain in the somewhat unattractive form of a "reprint," and one hopes that the author may at some future date be able to see his way to publish it as an independent contribution to the science of ornithology in Australasia. Purely local observation and study have too often a tendency towards narrowness and lack of system, a tendency against which the thoughtful study of such a work as this acts as the best kind of corrective.

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#### AMERICAN BIRDS.

[“The Birds of North and Middle America: a Descriptive Catalogue of the Higher Groups, Genera, Species, and Sub-Species of Birds Known to Occur in North America, from the Arctic Lands to the Isthmus of Panama, the West Indies, and other Islands of the Caribbean Sea, and the Galapagos Archipelago.” By Robert Ridgway.]

THIS great reference work, which is issued as a "Bulletin of the United States National Museum, No. 50," has reached Part III. The parts are substantial volumes (octavo size) of over 700 or 800 pages each. Part I., issued in 1901, included the Finch Family alone. Part II., issued 1902, included the Families Tanagers, Troupials, Honey-creepers, and Wood-Warblers, while the present Part (III.), issued 1904, comprises Wagtails and Pipits, Swallows, Waxwings, Silky Flycatchers, Palm-Chats, Vireos, Shrikes, Crows, and Jays, Titmice, Nuthatches, Creepers, Wrens, Dippers, Wren-Tits, and Warblers.

These three volumes contain the descriptions of about 1,250 species and sub-species, or about two-fifths of the total number of North and Middle American birds. The completed work is expected to run into eight or ten volumes. This gigantic task has been looming before the author for nearly a quarter of a century, and, so far as can be judged by the present parts, whether as literary or scientific work, it is simply beyond the pale of criticism. Only an ornithological giant could possibly attempt to raise such a monument. Think of the synonyms alone of the work—what a laborious task!—not to mention drudgery of compilation.

In view of a systematic list of Australian birds the following may be quoted with advantage from Professor Ridgway's preface:—

“The question of whether a given form should be considered as a species or a sub-species is very much a matter of material, both from a geographic and a numerical point of view. The greater the number of closely related forms, hitherto regarded as specifically distinct, that are examined especially when representing intermediate localities—the fewer becomes the number of those which are really

specifically distinct. As in the case of genera, very different extremes are often connected by a series of intergrading forms, approaching one or the other of the extreme types exactly in proportion to their geographical position between them; and other forms much less different appear to be really distinct through absence of 'intergrades.' In determining questions of this class, the author has exercised the fullest independence, without reference, so far as North American forms are concerned, to the rulings of the committee of the American Ornithologists' Union; not from lack of confidence in the committee's judgment, but from a full knowledge of the unsatisfactory conditions as to time and material under which their conclusions were usually reached. Satisfactory decisions affecting the status of described but still dubious forms is a question both of material and investigation, and the author holds that no conclusion in such a matter should be accepted unless based upon an amount of material and careful investigation equal to that bestowed by the original describer.

" Recognizing the fact that in the present stage of zoological nomenclature trinomials are a 'necessary evil,' the author has not hesitated to use them when such relationship was clearly indicated by the evidence. He has not, however, often done so on theoretical grounds, because, in the first place, the facts when known may or may not justify the step, and in the second because a binomial is preferable to a trinomial when there is any good excuse for its adoption. The greatest difficulty in deciding questions of this kind is in the case of insular forms, among which occur every possible degree of difference between related forms inhabiting different islands, so that it not only becomes largely a matter of individual judgment as to which should be given specific and which sub-specific rank, but furthermore the distinction made must, in the case of any author, necessarily be more or less arbitrary, since no 'hard and fast rule' for determining such questions seems possible.

" As observed before, the more familiar one becomes with the subject through the medium of specimens representing continuous geographic sequence of localities the fewer in number really distinct species become, and what have long been considered such resolve themselves, one by one, into a connected series of sub-specific forms, each representing a definite geographic area of more or less marked peculiarities of topography, climate, or other physical features. Such forms are fixed, or 'true,' over territory of uniform physical character, the intergrades coming from the meeting ground of two such areas. Such a group of conspecific forms may aptly be compared to the colours of the solar spectrum, which form a graded scale from red, through orange, yellow, green, and blue, to violet, with intermediate hues of greater or less number, according to the nature of the case requiring their indication by name. These colours of the spectrum, though imperceptibly running into one another, are obviously distinct, and the necessity of recognizing them by name has never been questioned.

" To carry the comparison still further, a certain species may include six sub-species or conspecific forms, which for convenience may be designated by the sub-specific names *rubra*, *aurantiaca*, *flava*, *viridis*, *cyanea*, and *violacea*. Intermediates between these might be designated as *rubro-aurantiaca* (or *aurantiaco-rubra*, according to which form the intermediate most resembles), *aurantiaco-flava* (or *flavo-aurantiaca*), *flavo-viridis*, *viridi-cyanea*, and *cyaneo-violacea*—i.e., red-orange (or orange-red), orange-yellow (or yellow-orange), yellow-green, green-blue, and blue-violet of the colour scale. The necessity for such a



nomenclature is just as great in zoology (and botany) as in chromatography; and to ignore this necessity is neither scientific nor sensible, but on the other hand is nothing less than suppression or perversion of an obvious truth. The only question that can possibly exist in the mind of those who have this matter to deal with is the degree of difference which should be recognized in nomenclature, and in this respect there is excuse for more or less difference of opinion, according to one's ability to discern differences and estimate the degree of their constancy, the extent and character of material studied, and the amount of time which has been devoted to its investigation. No doubt many of the forms which the author has recognized as subspecies in the present work may appear trivial to others, especially those who have not had advantage of the material upon which they are based; but in all cases it has been the author's desire to express exactly the facts as they appear to him in the light of the evidence examined, without any regard whatever to preconceived ideas, either of his own or of others, and without consideration of the inconvenience which may result to those who are inclined to resent innovations, forgetful of the fact that knowledge cannot be complete until all is known. This question of species and sub-species and their nice discrimination is not the trivial matter that some who claim a broader view of biological science affect to believe. It is the very foundation of more advanced scientific work; and without secure foundation no architect, however skillful, can rear a structure that will endure."

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## Australasian Ornithologists' Union.

ROUGH MINUTES OF 32ND MEETING OF THE COUNCIL OF THE A.O.U.,  
HELD AT THE RESIDENCE OF DR. C. S. RYAN, 37 COLLINS-STREET,  
17TH AUGUST, 1905.

Correspondence was received from the following:—

The Hon. the Premier of Tasmania, stating that he was in communication with the Hon. the Premier of New Zealand with a view to co-operating with regard to the protection of Penguins at Macquarie and other islands south of New Zealand, as desired by the Council of the A.O.U.

The President of the Marine Board of South Australia wrote stating that he would have pleasure in meeting the desire of the Council of the A.O.U. as far as possible, in that they would place the steamer *Governor Musgrave* at the disposal of the Council and members of the A.O.U. attending the Annual Session, and would convey them to the "camp-out" at Kangaroo Island, at the same time pointing out that the steamer did not usually visit Kangaroo Island until December, but that they would arrange to make their trip fit in with the time of the Session programme. He also enclosed a plan of Kangaroo Island.

Mr. J. W. Mellor also wrote, informing the hon. sec. that he had ascertained that Middle River would be the most advantageous site for the camp-out, both as regard the suitability for landing and the study of the avifauna of the island.

The president, Captain Hutton, F.R.S., wrote from England, stating that he had unfortunately been unable to attend the first meeting of the International Ornithological Congress held in England, but had attended the second meeting, and found that Mr. F. M. Littler, F.E.S.,

who had been appointed co-delegate, had been representing the Union, and he (Captain Hutton) had thought it best to leave the representation in his hands.

A communication was read from Mr. A. G. Campbell relative to his "Dichotomous Key," in which he stated that the Key would cover about 40 pages of *The Emu*. After a lengthy discussion it was decided to print the Key as a supplement to *The Emu*.

The hon. sec. pointed out the desirability of having the Union's journal copyrighted so as to include the copyright of the "Dichotomous Key," which matter was left to the hon. editors.

Letters were read and dealt with from the following:—F. M. Littler, W. Pidsley, A. Fowler, L. Harrison, T. W. Richards, A. Crossman, C. F. Belcher, and the Director Field Columbian Museum, Chicago.

The following new members were duly enrolled:—L. Harrison, Sydney; F. K. Calder, Fremantle; E. Brooke Nicholls and C. P. Kinane, Melbourne.

Mr. Robert Hall, F.L.S., C.M.Z.S., at the desire of the Council, kindly consented to give his lecture "A Naturalist's Tour in Siberia and the East," at the forthcoming Annual Session in Adelaide.

It was decided that in the event of the president, Captain Hutton, F.R.S., being unable to write a presidential address, owing to his absence in Europe, the task would therefore devolve upon one of the vice-presidents, and that Dr. Charles Ryan be asked to be good enough to assist the Council by preparing an address.

## South Australian Ornithological Association.

THE bi-monthly meeting of the South Australian Ornithological Association was held at Dr. A. M. Morgan's residence, Adelaide, on Friday evening, 7th July, 1905. Mr. F. R. Zietz presided over a good attendance.

Mr. J. W. Mellor reported that the Australasian Ornithologists' Union Congress would meet in Adelaide during October, and that it was the intention of the Union to hold an excursion to Kangaroo Island. It was resolved to assist the Union in every way to make the Congress a success.

Mr. F. R. Zietz read some interesting notes upon the crossing of various species of Australian Finches in England, resulting in some curious hybrids.

Mr. J. W. Mellor drew the attention of the members to the fact of a second Moa's egg having been found in New Zealand recently, the first specimen having been unearthed forty years ago. It was sold for £100.

The chief business of the evening consisted of the examination and discussion of the Honey-eater genus *Melithreptus*. Mr. A. H. C. Zietz, F.L.S., showed specimens of nearly all the species found in Australia, and gave some interesting notes upon them, especially in reference to a new species found recently by Mr. F. R. Zietz on Kangaroo Island, and which had been described by Mr. A. J. North, of the Sydney Museum, and designated the Long-billed Honey-eater (*M. magnirostris*), its nearest ally being the Brown-headed Honey-eater (*M. brevirostris*). Mr. Zietz also showed a pair of Chestnut-bellied Quail (*Excalfactoria lineata*), got at Dismal Gully, near Victor Harbour, S.A., and a specimen of the Oriental Pratincole (*Glareola orientalis*) from Milang, S.A. Mr. J. W. Mellor exhibited a specimen of

the Red-eyed Honey-eater (*Melithreptus lunulatus*) and the cup-shaped pendent nest of the Black-throated Honey-eater (*M. gularis*), and a specimen of the Blue Kingfisher (*Alycyon azurea*). He also reported that quite a number of native birds, not regularly seen, had this season put in an appearance at the Reed-Beds, near Adelaide, and were enjoying the strict protection accorded them by the residents generally, notably large numbers of the Magpie-Larks (*Grallina picata*), Dusky Wood-Swallows (*Artamus sordidus*), Yellow-rumped Diamond-Birds (*Pardalotus xanthopygius*), Mistletoe-Birds (*Dicaeum hirundinaceum*), Black-faced Cuckoo-Shrikes (*Graucalus melanops*), Varied Cuckoo-Shrikes *G. mentalis*, and the Flame-breasted Robin (*Petroica phoenicea*) had not long since returned from Tasmania, while the Tree Martin (*Petrochelidon nigricans*), through being protected and given places wherein to keep snug in winter, had remained in the district all the year round. Honey-eaters were also numerous in varied species, some of which had not been seen for several years past. Mr. F. R. Zietz showed a number of sternum bones of rare birds. Dr. Morgan exhibited oological specimens, notably the eggs of several of the Melithrepti, and also a bright blue Kingfisher from the Philippine Islands. Captain S. A. White reported that numbers of Whistling Eagles (*Haliastur sphenurus*) and Striped Brown Hawks (*Hieracidea berigora*) had lately taken up their abode on his property at the Reed-Beds, and were proving highly beneficial in killing young rabbits—a fact that should afford them protection from being ruthlessly shot and killed. Captain White also pointed out the absence of the Land Rail (*Hypotaenidia philippinensis*) this year, and as a consequence caterpillars and wire-worms were extremely plentiful, ravaging the vegetable crops.

### Bird Observers' Club.

THE third meeting of the Club was held on the 14th June, at the residence of Mr. A. J. Campbell, Armadale. About a dozen members were present, Mr. Campbell being voted to the chair. Miss H. Bowie, Dr. C. S. Ryan, Dr. G. Horne, and Mr. E. Scott were elected members. The figure of the male Blue Wren was adopted as the emblem of the Club. The following papers were read and discussed:—"Notes from Kyabram," by C. F. Belcher; "Note on White-bellied Storm-Petrel," by G. E. Shepherd; "A Moorland Pool," by C. L. Barrett. Mr. Robt. Hall made some interesting remarks on rare skins, which he exhibited, while Mr. A. G. Campbell illustrated his "Dichotomous Key" by the genera *Strepera* and *Melithreptus*.

The fourth meeting of the B.O.C., which took the form of dinner at Oxford Chambers, Melbourne, was held on the 19th July. After dinner there was the usual monthly meeting, Mr. D. Le Souëf occupying the chair. Mr. Fred. Linaere was elected a member. A table of field excursions was arranged. The papers read were:—"Pardalotes Nesting," illustrated by photographs, by C. P. Kinane; "Fruit-eating Birds," by A. G. Campbell; and "A Day at the You Yangs," by F. P. Godfrey. Mr. A. G. Campbell exhibited a series of Pardalote skins, and Mr. F. P. Godfrey a nest of the White-bearded Honey-cater taken at midwinter July.

The usual monthly meeting (fifth) took place at the residence of Mr. Donald Macdonald, Balaclava, on the 23rd August. Through the hospitality of Mr. and Mrs. Macdonald, fourteen members sat down to

dinner. At the meeting afterwards the host was voted to the chair. After discussion it was resolved to limit the twenty-five memberships for the present to gentlemen, but lady associates would be admitted up to the number of five. The following papers were read and discussed:—"A Trip to the West," by E. B. Nicholls; "A Trip to Gembrook," by E. J. Christian; "On the Ejection of Young by the Cuckoo," by A. Mattingley. Mr. C. L. Barrett exhibited two types of Scrub-Wrens' eggs, Mr. A. G. Campbell skins of various Acanthizas, while the host showed numbers of interesting trophies obtained during his trying experiences in the memorable siege of Ladysmith, notably a portion of a dark "mealy" loaf—his last day's ration served in the beleaguered city.

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### Notes and Notices.

"A Dichotomous Key to the Birds of Australia" is issued as a "Supplement" to this number of *The Emu*. Any members requiring extra copies of the "Supplement" may have them at one shilling each (postage extra) on application to the hon. sec. of the A.O.U.

A conference, representing New South Wales, Victoria, and South Australia, was held in Melbourne recently to deal with the question of the Murray River fisheries. Amongst resolutions agreed to was the following:—"That it be recommended that action be taken by each of the States with a view to the destruction of Shags, Pelicans, and turtles in inland waters."

At a meeting of the Field Naturalists' Club of Victoria held 14th August, 1905, Mr. H. J. Coles stated that during the past few weeks seventeen Grass-Owls (*Strix candida*) had been forwarded to him from various localities. Fifteen of the birds had been picked up dead, and were in very poor condition.

In connection with the next (Adelaide) Annual Session of the A.O.U., the hon. sec., Mr. A. E. Mattingley (address, Custom-House, Melbourne) has issued the following circular:—

"The fifth Annual Congress of the Australasian Ornithologists' Union will be held in Adelaide from 11th to 13th of October, and the Council would be glad if as many members as possible were to attend. Thereafter (on the 14th October) will be a 'working excursion' to and 'camp-out' at Kangaroo Island, for about 10 days. Those who intend to camp will need to bring blankets and eating utensils; other necessities will be supplied. Members leaving Melbourne by evening express on the 10th October can obtain a return ticket through the hon. secretary at the cost of £2 5s. It is the intention of the President of the Marine Board of South Australia to place the steamer *Governor Musgrave*, which will be visiting Kangaroo Island, at the disposal of members who intend camping out. The total cost of the 'camp-out' will therefore be about £1 or £1 5s. The hon. secretary would be glad to know if you will be able to attend, and the title of the paper, if any, you desire to contribute to the Congress."

A DICHOTOMOUS KEY to the BIRDS of AUSTRALIA.

By A. G. CAMPBELL, Melbourne.



## INTRODUCTION.

THE plan of this Key is founded upon the system first applied by a *savant* named Lamarck to plants ; but it will prove easily workable in all branches of natural history. The idea of dichotomy aims at selecting two contrasted characters. By eliminating that which does not apply to the specimen under notice, and by passing on to the next two characters indicated by the number in the margin, the name is finally reached.

The system has a fascination of its own which will be readily appreciated after a short acquaintance.

No previous knowledge of bird life is necessary with this Key, though it might be well to point out the exact meanings of the terms in use :—

The *culmen* is the ridge of the upper bill or mandible, and the measurement of this is taken from the feathers at the base to the tip.

The *tarsus* is the shank bone from the middle of the knee to the middle of the ankle.

The *wing* is measured from the point of the shoulder to the tip of the longest outside feathers or *primaries*.

Wing and tail feathers have all a narrow *outer web* and a wide *inner web*, which may be differently marked.

The *lores* are the spaces between the eyes and the base of the bill.

The *cere* is only found in a few genera, and is the membrane bare of feathers at the base of the bill.

All other characters will explain themselves. It is essential, however, that they be interpreted strictly as written, not confusing *forehead* with *crown*, which is the whole top of the head, nor *back* with *rump*, nor *breast* or *flanks* with *throat* or *abdomen*. But such terms as *plumage*, *upper surface*, *under surface*, and *head* have general value only. All measurements, especially those of *total length* and *wing*, it must be understood, may vary somewhat with different districts and skins.

The DIRECTIONS for working the Key are simple :

*Starting at No. 1, select the character that applies to the specimen ; take the number on the right-hand margin : turn to that, and proceed until the name is reached. Should a wrong turn be taken, the operator is soon aware of the fact by meeting characters that obviously do not apply to the specimen under notice.*

A little practice soon makes one expert in the simple art of observation.

Should the *genus* of the bird, however, be known, the index will quickly show from what number the *species* can be worked out.

Complete descriptions after the name of each species might add to the completeness of this Key, but as these already exist in " The British Museum Catalogue of Birds " and in " A Key to the Birds of Australia," by Robert Hall, reference, if required, might be made to them. I have to acknowledge the help of both these. The habitats indicated in the latter will be extremely useful.

In offering this little work to the members of the Australasian Ornithologists' Union, it is done in the hope that they will not hesitate to give any advice that may improve the Key, especially with the view of making it *applicable to work in the open*, without the destruction of bird life.

A. G. CAMPBELL.

MELBOURNE. 2nd October, 1905.



## DICHOTOMOUS KEY TO THE BIRDS OF AUSTRALIA.

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- |     |  |  |
|-----|--|--|
| 1.  | Wings reduced : flightless .. .. .   | 2  |
|     | Wings developed for flight (except <i>Biziura</i> , No. 80) .. .. .  | 6  |
| 2.  | Found in the sea ; web-footed. .. .. .   | PENGUINS. 3  |
|     | Terrestrial .. .. .  | 4  |
| 3.  | Longer than 20 inches : crested.   |  |
|     | <i>Catarrhactes chrysocome</i> (Crested Penguin).  |  |
|     | Shorter than 20 inches : not crested.  |  |
|     | <i>Eudyptula minor</i> (Little Penguin).   |  |
| 4.  | Fleshy helmet on head ; bill narrow.   |  |
|     | <i>Casuarius australis</i> (Cassowary).  |  |
|     | No fleshy helmet ; bill broad. .. .. .   | DROMÆUS. EMUS. 5                                     |
| 5.  | Feathers uniform grey with black tips. .. .. .   | <i>D. novaehollandiæ</i> (Emu).                      |
|     | Feathers barred, silky white and dark grey. .. .. .  | <i>D. irroratus</i> (Spotted Emu).                   |
| 6.  | Swimmers : web-footed or with lateral lobes .. .. .  | 7  |
|     | Waders (with partial membranes between toes) and Land birds ..   | 105  |
| 7.  | With lateral lobes to toes .. .. .   | 8  |
|     | Web-footed (except <i>Cladorhynchus</i> , No. 110, and <i>Recurvirostra</i> ,<br>No. 140, Waders with very long, thin legs ; tarsus 3 inches) .. | 11   |
| 8.  | General colour black. .. .. .  | <i>Fulica australis</i> (Coot).                      |
|     | General colour white and brown. .. .. .  | PODICEPS. GREBES. 9                                  |
| 9.  | Length 20 inches. .. .. .  | <i>P. cristatus</i> (Tippet Grebe).                  |
|     | Length 10 inches .. .. .   | 10   |
| 10. | Chin and throat black, with chestnut stripe down each side of neck.  |  |
|     | <i>P. novaehollandiæ</i> (Black-throated Grebe).   |  |
|     | Head black or brown : in summer with white hair-like feathers.   |  |
|     | <i>P. poliocephalus</i> (Hoary-headed Grebe).  |  |
| 11. | Nostrils running out in short or long tubes .. .. .  | 12   |
|     | Nostrils simple openings .. .. .   | 49   |
| 12. | Nostrils united or nearly so above beak .. .. .  | 13   |
|     | Nostrils distinct and separate .. .. .   | 42   |
| 13. | Length about 8 inches ; second primary longest. .. .. .  | STORM-PETRELS. 14                                    |
|     | Length 12 inches or more ; first primary longest or not shorter<br>than second. .. .. .  | PETRELS. 18  |
| 14. | Basal joint of middle toe much flattened. .. .. .  | CYMODROMA. 15  |
|     | Basal joint of middle toe not flat .. .. .   | 10   |
| 15. | Centre of abdomen white like flanks. .. .. .   |  |
|     | <i>C. grallaria</i> (White-bellied Storm-Petrel).  |  |
|     | Centre of abdomen black. .. .. .   | <i>C. melanogastra</i> (Black-bellied Storm-Petrel). |

16. Under surface all white; claws flattened and wide.  
*Pelagodroma marina* (White-faced Storm-Petrel).
- Under surface not all white; claws sharp .. .. . 17
17. Head, neck, and chest sooty-grey.  
*Garrodia nereis* (Grey-backed Storm-Petrel).
- Plumage sooty-black, except upper and under tail coverts, which are white. *Oceanites oceanicus* (Yellow-webbed Storm-Petrel).
18. Length about 12 inches; upper surface bluish; under surface white; tarsus bluish; nasal tube short .. .. . 19
- Plumage mostly uniform or not bluish and white; tarsus flesh colour or black; nasal tube long or strong; hook of bill large .. .. . 23
19. Bill black; first and second primary equal in length.  
*Halobæna cerulca* (Blue Petrel).
- Bill bluish; first primary longest. PRION. DOVE-PETRELS. 20
20. Bill broad; edges of upper mandible convex .. .. . 21
- Bill narrow; edges of upper mandible straight .. .. . 22
21. Width of bill .7 to .8 inches; palate plates visible when bill is shut.  
*P. vittatus* (Broad-billed Dove-Petrel).
- Width of bill .5 inches; palate plates only visible near gape.  
*P. banksi* (Banks Dove-Petrel).
22. Crown of head darker than back. *P. desolatus* (Dove-Petrel).
- Crown of head not darker than back. *P. ariel* (Fairy Dove-Petrel).
23. Length 34 inches; plumage dark brown; bill horn colour.  
*Ossifraga gigantea* (Giant Petrel).
- Characters otherwise .. .. . 24
24. Length 16 inches; back mottled black and white.  
*Daption capensis* (Cape Petrel).
- Back uniform .. .. . 25
25. Both nostrils visible from above; bill black or flesh colour. PUFFINUS. 26
- Nostrils united in a single opening or almost so; nasal tube stout or turned upward .. .. . 32
26. Plumage sooty only .. .. . 27
- Plumage sooty above, white beneath .. .. . 30
27. Legs and bill black; wing 10.5 inches  
*P. tenuirostris* (Short-tailed Petrel, Mutton-Bird).
- Legs flesh colour; bill not all black .. .. . 28
28. Tail wedge-shaped, 5 inches; wing 11.6 inches.  
*P. chlororhynchus* (Wedge-tailed Petrel).
- Tail rounded, 4 inches; wing 12 inches .. .. . 29
29. Under wing coverts ashy-white with dark shafts; bill dark.  
*P. griseus* (Sombre Petrel).
- Plumage sooty throughout; bill flesh colour, except tip.  
*P. carneipes* (Fleshy-footed Petrel).
30. Tail wedge-shaped, 5.5 inches long.  
*P. leucomelas* (White-fronted Petrel).
- Tail rounded, about 2.5 inches .. .. . 31
31. Total length 12 inches; under wing sooty.  
*P. gavia* (Forster Petrel).

Total length 10.5 inches ; under wing white.		
	<i>P. assimilis</i> (Allied Petrel).	
32.	Shank compressed, with sharp front edge .. .. .	33
	Shank normal, rounded on front edge .. .. .	34
33.	Plumage greyish-brown ; 12 tail feathers.	
	<i>Priofinus cincrcus</i> (Brown Petrel).	
	Forehead and under surface white ; 14 tail feathers.	
	<i>Priocella glacialoides</i> (Silvery-grey Petrel).	
34.	Upper and under surfaces similar sooty-black ; bill long, stout, not dark.	MAJAJQUEUS. 35
	Bill stout, black, hook large.	CESTRELATA. 36
35.	Chin and band over crown white.	
	<i>M. aquinoctialis</i> (Spectacled Petrel).	
	Plumage sooty-black throughout. <i>M. parkinsoni</i> (Black Petrel).	
36.	Under surface sooty .. .. .	37
	Under surface light .. .. .	38
37.	Plumage sooty-brown. <i>E. macroptera</i> (Great-winged Petrel).	
	Plumage greyish-sooty. <i>E. solandri</i> (Brown-headed Petrel).	
38.	Face and forehead white .. .. .	39
	Face and forehead like upper surface .. .. .	41
39.	Whole head white, except eye. <i>E. lessoni</i> (White-headed Petrel).	
	Face, forehead, and under surface white .. .. .	40
40.	Upper surface dark slaty-black.	
	<i>E. leucoptera</i> (White-winged Petrel).	
	Upper surface greyish-black ; crown much darker than back.	
	<i>E. cooki</i> (Cook Petrel).	
41.	Throat white ; wing 10.3 inches ; tarsus 1.4 inches.	
	<i>E. mollis</i> (Soft-plumaged Petrel).	
	Throat dark like back ; wing 11 inches ; tarsus 1.75 inches.	
	<i>E. rostrata</i> (Peale Petrel).	
42.	Wing 4.7 inches ; nostrils opening upward.	
	<i>Pelecanoides urinatrix</i> (Diving Petrel).	
	Wing 20 inches or more ; nostrils opening forward. ALBATROSSES.	43
43.	Plumage sooty ; tail long, wedge-shaped ; bill black.	
	<i>Phœbetría fuliginosa</i> (Sooty Albatross).	
	Plumage light coloured ; tail short, rounded .. .. .	44
44.	Side of bill without furrow. DIOMEDEA.	45
	Side of bill with deep furrow. THALASSOGERON.	47
45.	Head white (crown and back sooty in youth) .. .. .	46
	Head buff (young all sooty-brown with chin paler) ; wing 22 inches.	
	<i>D. albatrus</i> (Short-tailed Albatross).	
46.	Middle of back white in age (sooty in young, which has forehead and face white) ; wing 25 inches.	
	<i>D. exulans</i> (Wandering Albatross).	
	Middle of back slaty-black ; wing 20 inches.	
	<i>D. melanophrys</i> (Black-browed Albatross).	
47.	Lores not much darker than crown ; bill boldly coloured yellow and black .. .. .	48
	Lores greyish-black ; bill pale colour.	
	<i>T. cautus</i> (White-capped Albatross).	

48. Lower edge of lower bill horn colour (head dark grey, bill brownish-black in youth). *T. culminatus* (Flat-billed Albatross).  
Base only and not lower edge of bill yellow. *T. chlororhynchus* (Yellow-nosed Albatross).
49. Three toes webbed, hind toe free .. .. . 50  
All four toes united one to the other by webs .. .. . 91
50. Upper beak sharp and straight or hooked .. .. . 51  
Upper beak flattened and with nail-like tip. DUCKS. 73
51. Claws feeble; bill without membrane (cere) at base .. .. . 52  
Claws large and hooked; bill with naked cere at base. SKUAS. 71
52. Both mandibles about equal in length and slender. TERNS. 53  
Upper mandible hooked over lower. GULLS. 70
53. Outside tail feathers longest .. .. . 54  
Outside tail feathers shortest .. .. . 64
54. Tarsus short comparatively .. .. . 55  
Tarsus very slender. 1.6 inches long. *Gelochelidon anglica* (Gull-billed Tern).  
55. Bill slender; tail half length of wing. STERNA. 56  
Bill very stout (red); tail less than half wing. *Hydroprogne caspia* (Caspian Tern).
56. Total length not more than 14 inches; wing to 9 inches .. .. . 57  
Total length 14 to 20 inches; wing 10 to 14 inches .. .. . 59
57. Crown black in breeding plumage; forehead white, bill and legs yellow .. .. . 58  
Crown always white; nape of neck black; bill and legs black. *S. melanauchen* (Black-naped Tern).  
58. Lores white. *S. nereis* (White-faced Ternlet).  
Lores black. *S. sinensis* (White-shafted Ternlet).
59. Back and rump umber or black .. .. . 60  
Back and rump pale to dark grey .. .. . 61
60. Back and rump umber (under parts white in young). *S. anaetheta* (Panayan Tern).  
Back and rump black (under parts dark brown in young). *S. fuliginosa* (Sooty Tern).
61. Forehead black to base of beak .. .. . 62  
Forehead white; crown black (mottled white when immature) .. .. . 63
62. Pale grey above; rose tinge on white breast; wing 9.3 inches; bill orange (black in youth); legs red. *S. dougalli* (Roseate Tern).  
Plumage grey above; wing 12 inches; bill orange or red; legs black. *S. media* (Lesser Crested Tern).
63. Bill greenish-yellow; legs blackish; wing 14 inches *S. bergii* (Crested Tern).  
Bill black; legs red; wing 11.3 inches. *S. frontalis* (White-fronted Tern).
64. Plumage white or white and grey .. .. . 65  
Plumage grey or chocolate-brown or sooty .. .. . 67
65. Plumage pure white. *Gygis candida* (White Tern).  
Upper surface grey; cap and flanks black. HYDROCHELIDON. 66
66. Wing 9.5 inches. *H. hybrida* (Marsh Tern).

- Wing 8.2 inches. *H. leucoptera* (White-winged Tern).
67. General colour grey. *Procelsterna cinerea* (Grey Noddy). 68  
 General colour chocolate-brown or sooty . . . . . 69
68. Length 12 or 13 inches; bill slender MICRAXOUS. 69  
 Length 16 inches; bill strong. *Anous stolidus* (Noddy).
69. Bill 1.75 inches; crown ashy-grey; lores and cheeks grey.  
*M. tenuirostris* (Lesser Noddy).  
 Bill 2 inches; crown white; lores and cheeks black.  
*M. leucocapillus* (White-capped Noddy).
70. Wing 12 inches; bill red. *Larus nova-hollandiæ* (Silver Gull).  
 Wing 17.5 inches; bill olive or yellow.  
*Gabianus pacificus* (Pacific Gull).
71. Plumage dark brown (young with rufous marks on back); wing  
 15 to 17 inches; centre pair of tail quills project  $\frac{1}{2}$  inch.  
*Megalestris antarctica* (Skua).  
 Plumage not uniform; wing about 14 inches; centre pair of tail  
 quills project 3 inches. STERCORARIUS 72
72. Central tail feathers pointed and tapering; wing 13 inches.  
*S. crepidatus* (Richardson Skua).  
 Central tail feathers broad and rounded; wing over 14 inches.  
*S. pomatorhinus* (Pomarine Skua).
73. Hind toe not lobed; length either 13 inches or more than 30 . . . . . 74  
 Hind toe broadly or narrowly lobed . . . . . 78
74. Upper surface glossy green. NETTOPUS. 75  
 Plumage black and white or brownish-slate . . . . . 76
75. Neck dark green (male) or barred white and green (female).  
*N. pulchellus* (Green Goose-Teal).  
 Neck white (male) or narrowly barred black (female).  
*N. albipennis* (White-quilled Goose-Teal).
76. Plumage black and white . . . . . 77  
 Plumage brownish-slate; bill yellow.  
*Cereopsis nova-hollandiæ* (Cape Barren Goose).
77. Plumage black with white primaries and pink bill.  
*Chenopsis atrata* (Black Swan).  
 Plumage black and white; bill reddish-brown.  
*Anseranas semipalmata* (Pied Goose).
78. Hind toe broadly lobed; no metallic patch on wing . . . . . 79  
 Hind toe very narrowly lobed; often metallic patch on wing . . . . . 81
79. Tail feathers narrow and very stiff; no white on wing . . . . . 80  
 Tail feathers not stiff; conspicuous white patch on wing.  
*Nyroca australis* (White-eyed Duck).
80. Pouch under chin; 24 tail feathers; sexes similar in colour. (Too  
 heavy for flight.) *Biziura lobata* (Musk-Duck).  
 No pouch; 18 tail feathers; male deep chestnut breast, female  
 freckled grey. *Eriasmatura australis* (Blue-billed Duck).
81. Bill flat and broad, black . . . . . 82  
 Bill high and goose-like, olive-brown.  
*Chenonetta jubata* (Maned Goose or Wood-Duck).
82. Wing 11 inches or over . . . . . 83  
 Wing 10 inches or under . . . . . 84

83. Head and neck white : sexes similar.  
*Tadorna rajah* (White-headed Shielduck).  
 Head and neck glossy black (male) or head brown (female).  
*Casarca tadornoides* (Shielduck or Mountain-Duck).
84. Feathers of lower flanks with broad longitudinal marks ; sides of chest rufous, black-barred or quite plain.  
 DENDROCYCNA. TREE-DUCKS. 85
85. Feathers of lower flanks neither prominently marked nor plain .. 86  
 Flanks for most part white, with broad black stripes ; no chestnut on wing. *D. cytoni* (Plumed Whistling-Duck).  
 Upper flanks plain rufous ; deep chestnut mark on shoulder.  
*D. arcuata* (Whistling-Duck).
86. Bill spoon-shaped .. .. . 87  
 Bill with parallel sides .. .. . 90
87. General colour brownish, with other colours prominent .. .. 88  
 General colour blackish, freckled with grey (no wing-patch).  
*Stictonetta nœvosa* (Freckled Duck).
88. Soft membrane hanging from sides of bill near tip, rose-pink mark behind eye. *Malacorhynchus membranaceus* (Pink-eared Duck).  
 No soft membrane ; no pink colour. SPATULA. 89
89. Head and upper neck glossy green (male), deep brown, barred reddish (female). *S. clypeata* (Common Shoveller).  
 Head and upper neck brownish-black (male), very brown tail (female). *S. rhynchotis* (Shoveller or Blue-wing).
90. Distinct black band through eye, with light band above.  
*Anas superciliosus* (Black Duck).  
 No bands on face ; head and neck metallic green (male) ; young and female brownish throughout, streaked with black.  
*Nettion castaneum* (Teal).  
 No bands on face ; sexes similar ; weight 1 lb. 2 ozs., against 1 lb. 8 ozs. of previous species. *Nettion gibberifrons* (Grey Teal).
91. Large distensible pouch on bill, which is 18 inches long.  
*Pelecanus conspicillatus* (Pelican).  
 Bill less than 6 inches : pouch absent or not prominent .. .. 92
92. Neck long and slender ; upper surface black .. .. . 93  
 Neck stout ; upper surface light (including *Fregata*, No. 98, which are blackish with forked tails, and some *Sula*, No. 99, which are brown) .. .. . 98
93. Bill pointed. *Plotus novæ-hollandiæ* (Darter).  
 Bill hooked at extremity. PHALACROCORAX. CORMORANTS. 94
94. Plumage black .. .. . 95  
 Plumage black and white .. .. . 96
95. Length 35 inches : space round eye yellow.  
*P. carbo* (Black Cormorant).  
 Length 25 inches : space round eye blackish.  
*P. sulcirostris* (Little Black Cormorant).
96. Length 23 inches : broad white eyebrow.  
*P. melanoleucus* (Little Cormorant).  
 Length above 25 inches : no white above eye.. .. . 97
97. Bill 1.8 to 2 inches ; eye-space blackish.  
*P. gouldi* (White-breasted Cormorant).

Bill 2.7 inches : eye-space yellow.

- P. hypoleucus* (Pied Cormorant).
98. Bill pointed . . . . . 99  
 Bill strongly hooked. . . . . FREGATA. FRIGATE-BIRDS. 104
99. Tail wedge-shaped (young mostly brown). . . . . SULA. GANNETS. 100  
 Tail with two long centre feathers. . . . . PHAËTON. TROPIC-BIRDS. 103
100. Plumage mostly white ; head freckled brown in youth . . . . . 101  
 Upper surface, neck, and chest sooty-brown ; breast and abdomen  
 white. . . . . *S. sula* (Brown Gannet).
101. Feathers of head and neck white . . . . . 102  
 Feathers of head and neck yellowish-buff ; throat naked for 2 inches.  
 . . . . . *S. serrator* (Gannet).
102. Primaries and secondaries of wing and tail brown ; legs greenish. . . . .  
 . . . . . *S. cyanops* (Masked Gannet).  
 Outer webs flight feathers grey or black ; tail white ; legs ver-  
 million. . . . . *S. piscator* (Red-legged Gannet).
103. Outer webs of primaries white ; long tail feathers carmine. . . . .  
 . . . . . *P. rubricauda* (Red-tailed Tropic-Bird).  
 Outer webs primaries black, tipped white ; tail feathers whitish.  
 . . . . . *P. lepturus* (White-tailed Tropic-Bird).
104. White patch on black flank (male) or white collar (female). . . . .  
 . . . . . *F. ariel* (Lesser Frigate-Bird).  
 No white on flank (male) ; or no collar, breast and sides white (female).  
 . . . . . *F. aquila* (Frigate-Bird).
105. Without hind toes . . . . . 106  
 With hind toes very small or much developed . . . . . 130
106. Thick-set birds living in grass or scrub ; legs yellow. . . . .  
 . . . . . TURNIX. BUSTARD-QUAILS. 107
- Long-legged birds about seashore, swamp, or plain . . . . . 112
107. More than 7 inches in length . . . . . 108  
 Less than 7 inches in length . . . . . 110
108. Shank not longer than middle toe and claw . . . . . 109  
 Shank longer than middle toe and claw ; chest buff (male) or collar  
 rufous (female). . . . . *T. maculosa* (Red-backed Quail).
109. Chest whitish, with subterminal black mark to feathers (male), or  
 black, many feathers terminated white (female). . . . .  
 . . . . . *T. melanogaster* (Black-breasted Quail).  
 Chest buff, irregularly marked grey (male), or with pale shaft  
 streaks (female). . . . . *T. varia* (Painted Quail).
110. Chest grey or rufous ; feathers round eye black . . . . . 111  
 Chest and feathers round eye light red. . . . . *T. velox* (Little Quail).
111. Chest grey ; upper surface uniform light red. . . . .  
 . . . . . *T. castanonota* (Chestnut-backed Quail).  
 Chest rufous : upper surface barred.  
 . . . . . *T. pyrrhothorax* (Red-chested Quail).
112. Total length 18 inches or over . . . . . 113  
 Total length less than 18 inches . . . . . 117
113. About 4 feet in length. . . . .  
 . . . . . *Eupodotis australis* (Bustard or Wild Turkey).  
 Length 18 to 24 inches . . . . . 114





129. White collar complete. *E. hiaticola* (Ringed Dottrel).  
 White collar on hind-neck separated by black band from under  
 surface. *E. melanops* (Black-fronted Dottrel).
130. Hind toe distinctly raised above level of others; total length  
 less than 25 inches .. .. . 131  
 Hind toe or toes same level as front ones [includes Pigeons and Doves  
 (No. 336), birds with bills swollen towards tip, soft skin at  
 base and nostrils overhung by valve] .. .. . 177  
 (Also two long-legged birds over 40 inches long—see No. 184.)
131. Short yellowish legs, small feet; culmen short and arched; tail  
 minute .. .. . 132  
 Long dark legs, or toes long and slender, tail small but prominent 136
132. Bill black; culmen strongly curved. QUAILS. 133  
 Bill yellow; culmen not strongly curved. (Female has black collar  
 spotted white, also chest rufous.)  
*Pedionomus torquatus* (Plain-Wanderer).
133. Over 6 inches in length .. .. . 134  
 Not 6 inches in length.
- Excalfactoria lineata* (Chestnut-bellied Quail).
134. Outer web of primaries uniform brown; eyebrow very light.  
*Coturnix pectoralis* (Stubble Quail).  
 Outer web of primaries mottled; white shaft stripes on back  
 narrow (male) or broad (female). SYNÆCUS. 135
135. Wing about 4.2 inches. *S. diemenensis* (Tasmanian Quail).  
 Wing about 3.5 inches. *S. australis* (Brown Quail).  
 (Includes *S. sordidus*, with very fine stripes and plumage  
 not boldly marked.)
136. Small feet; bill as long or longer than middle toe and claw .. 137  
 Very large feet; bill much shorter than middle toe and claw .. 163
137. Bill curved upward slightly or distinctly .. .. . 138  
 Bill curved downward or straight .. .. . 142
138. Total length 13 to 16 inches .. .. . 139  
 Total length 9 inches. *Terekia cinerea* (Terek Sandpiper).
139. Length about 16 inches .. .. . 140  
 Length about 13 inches. *Glottis nebularis* (Greenshank).
140. Plumage uniform and mottled. LIMOSA. GODWITS. 141  
 Plumage black and white, breast rufous. (This species has half-  
 webbed toes, but is not a swimmer.)  
*Recurvirostra nova-hollandiæ* (Red-necked Avocet).
141. Tail barred black and white.  
*L. nova-hollandiæ* (Barred-rumped Godwit).  
 Tail black with white bases to inner feathers.  
*L. limosa* (Black-tailed Godwit).
142. Bill curved downward .. .. . 143  
 Bill straight .. .. . 146
143. Total length 7.5 inches; under surface white (rufous in breeding  
 plumage). *Ancylochilus subarquatus* (Curlew Stint).  
 Total length 12 to 24 inches .. .. . 144
144. Length 13 inches; wing 7 inches; bill 1.7 inches; under surface  
 light buff. *Mesoscolopax minutus* (Little Whimbrel).

- Plumage uniformly mottled NUMENIUS. 145  
 145. Length about 24 inches; wing about 12 inches; bill 7 inches.  
*N. cyanopus* (Curlew).  
 Length about 15 inches; wing 8.8 inches; bill 3 inches.  
*N. variegatus* (Whimbrel).  
 146. Length about 15 inches; face wattled.  
 LOBIVANELLUS. PLOVERS (2). 147  
 Length less than 12 inches; face not wattled .. .. 148  
 147. Sides of chest brown; collar white.  
*L. miles* (Masked Plover).  
 Sides of chest and hind-neck black. *L. lobatus* (Spur-winged Plover).  
 148. Back black; length 8 inches; bill stout, .9 inch.  
*Arenaria interpres* (Turnstone).  
 Back rufous or olive-brown .. .. 149  
 149. Hind toe small; armpit feathers brown or light .. .. 150  
 Hind toe extremely minute; long armpit feathers black; total  
 length 10.5 inches. *Squatarola helvetica* (Grey Plover).  
 150. Thigh and knee not pink; bill black or brown .. .. 151  
 Thigh and knee red-pink; also base of bill.  
*Erythrogonys cinctus* (Red-kneed Dottrel).  
 151. Total length more than 6 inches .. .. 152  
 Total length 6 inches; forehead and under surface white.  
*Limonites ruficollis* (Little Stint).  
 152. Long nasal grooves along bill, which is black and 1 inch or more in  
 length; tail square or pointed .. .. 153  
 No nasal grooves; bill .7 inch, brown; wing very long (only about  
 1 inch shorter than body). PRATINCOLES. 162  
 153. Middle and outer toes connected by a web at base .. .. 154  
 Toes all cleft to base .. .. 158  
 154. Length 10 inches and over .. .. 155  
 Length 9 inches and under .. .. 156  
 155. Wing 6.5 inches; inner webs of primaries barred.  
*Bartramia longicauda* (Bartram Sandpiper).  
 Wing 5.3 inches; no wing bars; under surface and rump white.  
*Totanus stagnatilis* (Little Greenshank).  
 156. Lower back, rump, and upper tail coverts grey; wing about 6 inches.  
 HETERACTITIS. 157  
 Lower back, rump, and upper tail coverts not grey; wing 4 to 4.3  
 inches. *Tringoides hypoleucus* (Common Sandpiper).  
 157. Abdomen all barred; nasal groove along two-thirds of bill.  
*H. incanus* (American Grey-rumped Sandpiper).  
 Abdomen white; nasal groove along half of bill.  
*H. brevipes* (Grey-rumped Sandpiper).  
 158. Bill 2.7 inches; subterminal tail-band reddish.  
*Gallinago australis* (Snipe).  
 Bill less than 2 inches .. .. 159  
 159. Bill slightly longer than tarsus; under parts (except for a few  
 streaks on breast), all white (rufous in breeding plumage).  
 TRINGA. 160  
 Bill slightly shorter than tarsus; under parts not all white .. 161

160. Upper tail coverts white ; wing 7 to 7.6 inches ; bill 1.6 to 1.8 inches.  
*T. crassirostris* (Great Sandpiper).  
 Upper tail coverts white, barred black ; wing 6.2 to 6.8 inches ; bill  
 1.1 to 1.5 inches. *T. canutus* (Knot).
161. Length 7 inches ; wing 5.4 inches.  
*Heteropygia acuminata* (Sharp-tailed Stint).  
 Length 9.5 inches ; wing 5.5 to 5.9 inches. (Female has buff stripe  
 down head.) *Rostratula australis* (Painted Snipe).
162. Black under wings ; tail rounded, outstretched legs reaching beyond  
 tip. (Chest streaked in female.) *Siltia isabella* (Pratincole).  
 Chestnut under wings ; tail forked ; tarsus short. (Throat streaked  
 in female.) *Glareola orientalis* (Oriental Pratincole).
163. Bill stout or with horny or fleshy plate on head ; or bill much swollen  
 at base .. .. . 164  
 Bill normal shape, medium length, tapering, upper tip slightly in  
 advance .. .. . 170
164. With red fleshy helmet ; middle toe 3.6 inches ; back of neck and  
 crown black (rufous in youth).  
*Hydralactor gallinaceus* (Comb-crested Jacana or Parra).  
 Bill stout or swollen at base, or with horny plate on head .. .. 165
165. Bill swollen at base ; wing about 5.75 inches.  
*Amaurornis moluccana* (Rufous-tailed Moor-Hen).  
 Bill stout or with horny plate on head ; wing more than 7 inches. 166
166. Bill all red (also large head-plate). PORPHYRIO. BALD-COOTS. 167  
 Bill mostly olive or dark .. .. . 168
167. Legs all red. *P. melanonotus* (Bald-Coot or Water-Hen).  
 Legs light or dark green. *P. bellus* (Blue Bald-Coot).
168. Primaries and secondaries of wing equal in length ; tarsus 3.25  
 inches ; large white patch on flank.  
*Tribonyx mortieri* (Native-Hen).  
 Primaries longer than secondaries ; tarsus 2.5 inches .. .. 169
169. Upper tail coverts all black.  
*Microtribonyx ventralis* (Black-tailed Native-Hen).  
 Under tail coverts black in centre, white on sides.  
*Gallinula tenebrosa* (Black Moor-Hen.)
170. Hind toe not half as long as bill. RAILS. 171  
 Hind toe nearly as long or longer than bill ; total length 7.5 inches  
 and less. CRAKES. 174
171. Length 17 inches ; abdomen chestnut.  
*Eulabcornis castaneiventris* (Chestnut-bellied Rail).  
 Length less than 13 inches ; abdomen slaty .. .. . 172
172. Head, hind-neck, and upper mantle uniform chestnut ; length 11.5  
 inches. *Rallina tricolor* (Red-necked Rail).  
 Head, hind-neck, and upper mantle not uniform. HYPOTENIDIA. 173
173. Breast uniform slate ; length 8.5 inches.  
*H. brachypus* (Slate-breasted Rail).  
 Breast barred with white ; length 10.5 inches.  
*H. philippinensis* (Pectoral Rail).
174. Abdomen, throat, and eyebrow white (no eyebrow mark in young  
 bird). *Poliolimnas cinereus* (White-browed Water-Crake).

- Abdomen, throat, and eyebrow not white. PORZANA. 175
175. Chest dark grey; wings olive .. .. . 176
- Chest light grey; wings brown *P. palustris* (Little Crane).
176. Flecked with white on upper and under surfaces. *P. fluminca* (Spotted Crane).
- White only under throat, wings, and tail. *P. tabuensis* (Spotless Crane).
177. Bill and legs long; bill curved, spoon-shaped, or sharp-pointed: total length over 18 inches (including two Bitterns, No. 195, 10 and 15 inches long; birds with pointed bills and ornamental crest and neck feathers) .. .. . 178
- Characters not as specified .. .. . 200
178. Bill much curved or spoon-shaped .. .. . 179
- Bill sharp-pointed .. .. . 183
179. Bill spoon-shaped; plumage pure white. PLATALEA. 180
- Bill curved; plumage not pure white. IBISES. 181
180. Bill and legs black. *P. regia* (Black-billed Spoonbill).
- Bill and legs yellow. *P. flavipes* (Yellow-billed Spoonbill).
181. General colour white; wings partly black. *Ibis molucca* (White Ibis).
- General colour black and white or rufous .. .. . 182
182. Under surface pure white. *Carphibis spinicollis* (Straw-necked Ibis).
- Under surface mostly rufous. *Plegadis falcinellus* (Glossy Ibis).
183. Lores feathered; no plumes on lower neck; length over 40 inches. (Hind toe raised) .. .. . 184
- Lores and space round eye naked; ornamental crest and neck plumes. EGRETS, HERONS, and BITTERNS. 185
184. Colour grey; bare skin round ears; length 42 inches. *Antigone australasiana* (Crane or Native Companion).
- Colour white and glossy black; legs red; length 48 inches. *Xenorhynchus asiaticus* (Black-necked Stork).
185. Colour white .. .. . 186
- Colour not white .. .. . 188
186. Length about 22 inches; wing 10.7 inches. *Garzetta nigripes* (Little Egret).
- Length 25 or 30 inches .. .. . 187
187. Length about 25 inches; wing 11 inches. *Mesophoyx plumifera* (Plumed Egret).
- Length about 30 inches; wing 15 inches. *Herodias timorensis* (White Egret).
188. Plumage slate colour .. .. . 189
- Plumage grey and white, black and white, or mottled .. .. . 192
189. Length about 50 inches; bill 6.5 inches. *Ardea sumatrana* (Great-billed Heron).
- Length 23 to 36 inches .. .. . 190
190. Length about 36 inches; bill yellow. *Ardea cinerea* (Grey Heron).
- Length 23 or 26 inches .. .. . 191
191. Length about 23 inches; pure white (or buff) streak down each side of throat. (This species is often white in plumage.) *Demigretta sacra* (Reef Heron).

	Length about 26 inches; forehead, eyebrow, and throat white.	
	<i>Notophoxyx nova-hollandiæ</i> (White-fronted Heron).	
192.	Plumage grey and white or black and white .. .. .	193
	Plumage chestnut and white or mottled .. .. .	195
193.	Breast and abdomen pure white .. .. .	194
	Breast and abdomen streaked with black.	
	<i>Notophoxyx pacifica</i> (White-necked Heron).	
194.	Crown of head and sides of face black.	
	<i>Notophoxyx flavirostris</i> (Pied Egret).	
	Whole head white. <i>Notophoxyx aruensis</i> (Aru Egret).	
195.	Length about 10 inches; crown black (male) or rufous (female).	
	<i>Ardetta pusilla</i> (Little Bittern).	
	Length more than 15 inches .. .. .	196
196.	Length about 16 inches .. .. .	197
	Length more than 19 inches .. .. .	198
197.	Length 16 inches; wing 5.2 inches.	
	<i>Ardetta sinensis</i> (Little Yellow Bittern).	
	Length 17 inches; wing 7.7 inches; feathers of shoulder edged sandy.	
	<i>Butoroides stagnatilis</i> (Thick-billed Bittern).	
198.	Length about 24 inches .. .. .	199
	Length about 19 inches; wing 11.5 inches; plumage light chestnut and white, cap black, with two white plumes (but when not mature whole plumage is mottled)	
	<i>Nycticorax caledonicus</i> (Night-Heron).	
199.	Length 21 to 24 inches; wing about 8.6 inches and uniform in colour.	
	<i>Dupetor gouldi</i> (Black Bittern).	
	Length 24 inches or more; wing 12.5 inches, and mottled.	
	<i>Botaurus péciloptilus</i> (Bittern).	
200.	Feet strong, with powerful claws; bill stout, very strongly hooked.	
	BIRDS OF PREY. 201	
	No powerful talons; bill not strongly hooked [except in Cockatoos and Parrots (No. 243), birds with two toes turned to rear] 242	
201.	Eyes directed to the front; face encircled by a disk of feathers; toes feathered. OWLS. 202	
	Eyes on sides of head; nostrils and toes bare of feathers.	
	EAGLES, FALCONS, and HAWKS. 215	
202.	Inner toe equal in length to middle toe, claw of which is serrated; tarsus twice as long as middle toe. STRIX. 203	
	Middle toe longest and its claw not serrated; tarsus not twice length of middle toe. NIXOX. 207	
203.	Under surface pure white with small brown spots	
	<i>S. delicaiula</i> (Delicate Owl).	
	Under surface buff or sooty with brown or white spots .. .. . 204	
204.	General colour sooty. <i>S. tenebricosa</i> (Sooty Owl).	
	General colour brown .. .. . 205	
205.	Back finely mottled and spotted; tarsus 2.5 inches .. .. . 206	
	Back with spots only of white; tarsus 3.5 inches.	
	<i>S. candida</i> (Grass-Owl).	
206.	Face disk purplish, margined with deep brown spots.	
	<i>S. nova-hollandiæ</i> (Masked Owl).	

- Face disk deep chestnut, encircled with black.  
*S. castanops* (Chestnut-faced Owl).
207. Total length more than 14.5 inches (female much larger than male) 208  
 Total length less than 14.5 inches (female much larger than male) 212
208. Length 20 to 24 inches: abdomen with cross markings .. .. 209  
 Length 18 inches and less: abdomen with longitudinal markings 210
209. General colour greyish: two or three cross bars on each feather of  
 breast. *N. strenua* (Powerful Owl).  
 General colour dark brown: breast feathers with numerous fine  
 cross bars. *N. humeralis* (Rufous Owl).
210. Length about 16 inches. .. .. 211  
 Length less than 15 inches. *N. peninsularis* (Cape York Owl).
211. Colour dark brown; wing 12.5 inches.  
*N. connivens* (Winking-Owl).  
 Colour sandy brown; wing 11.5 inches.  
*N. occidentalis* (Western Winking-Owl.)
212. Under surface deep rufous .. .. 213  
 Under surface rufous, much marked with white .. .. 214
213. Length 13.5 inches: wing 8.6 inches or more.  
*N. ocellata* (Marbled Owl).  
 Length about 12 inches; wing 8.5 inches: throat and breast very  
 rufous. *N. lurida* (Lurid Owl).
214. Back not spotted between shoulders: wing to 10.3 inches.  
*N. boobook* (Boobook Owl).  
 Back spotted with white: wing 9 inches.  
*N. maculata* (Spotted Owl).
215. More than 20 inches long (female much larger than male) .. 216  
 Less than 20 inches long: wing always less than 14 inches .. 226
216. Length over 30 inches .. .. 217  
 Length between 20 and 30 inches: wing more than 14 inches .. 218
217. General colour black or rufous.  
*Uroaëtus audax* (Wedge-tailed Eagle or Eaglehawk).  
 General colour grey and white (buff in youth).  
*Haliastur leucogaster* (White-bellied Sea-Eagle).
218. Head and breast black or white .. .. 219  
 Head and breast rufous, streaked with brown or black .. .. 220
219. Head and breast black: wing 19 inches: abdomen black and  
 rufous. *Gyfoictinia melanosterna* (Black-breasted Buzzard).  
 Head and breast white, mottled with brown: wing 16 to 19 inches;  
 abdomen pure white.  
*Pandion leucocephalus* (Osprey or Fish-Hawk).
220. Tarsus 3.5 inches or over. CIRCUS. HARRIERS. 221  
 Tarsus not more than 2.5 inches. .. .. 222
221. Rump light colour: breast with brown stripes.  
*C. gouldi* (Harrier or Swamp-Hawk).  
 No light rump: breast rufous with white spots.  
*C. assimilis* (Spotted Harrier).
222. Under surface sandy or brownish (throat not lighter) .. .. 223  
 Under surface bright rufous, each feather with black centre, throat  
 whitish; wing 14 to 16 inches.  
*Urospizius radiatus* (Red Goshawk).

223. Head and neck brownish, like back, with blackish stripes .. 224  
 Head and neck sandy (lighter than back), with fulvous stripes; wing  
 about 16 inches. (Young has feathers of back and shoulder  
 tipped white.) *Haliastur sphenurus* (Whistling Eagle).
224. Tail 8.5 to 9.5 inches, square when expanded .. 225  
 Tail 10.75 inches, forked; wing 16 inches. *Milvus affinis* (Kite).
225. Wing about 18 inches; rump whitish.  
*Lophoictinia isura* (Square-tailed Kite).  
 Wing about 15 inches; rump not white.  
*Nisactus morphnoides* (Little Eagle).
226. Crested. *Baza subcristata* (Crested Hawk).  
 Not crested (female much larger than male). GOSHAWKS, &c. 227
227. Plumage chestnut and white, grey and white, or pure white .. 228  
 Plumage mostly dark, mottled or uniform (includes Grey Falcon,  
 No. 239) .. .. . 233
228. Plumage pure white, .. .. . 229  
 Plumage chestnut and white or grey and white .. .. . 230
229. Wing 10.5 to 12.5 inches. *Astur nova-hollandia* (White Goshawk).  
 Wing 7.7 to 8.7 inches. *Astur leucosomus* (Lesser White Goshawk).
230. Plumage grey and white, with black shoulders. ELANUS. 231  
 Plumage grey and white, without black shoulders; or chestnut and  
 white .. .. . 232
231. Black bar on under side of wing. *E. scriptus* (Letter-winged  
 Kite).  
 Black spot only under wing. *E. axillaris* (Black-shouldered Kite).
232. Upper surface and tail grey; breast white.  
*Astur cinereus* (Grey Goshawk).  
 Plumage rich chestnut, with white head and neck (young all brown  
 with white stripes).  
*Haliastur girrenera* (White-headed Sea-Eagle).
233. Wing 10 inches and less .. .. . 234  
 Wing more than 10 inches .. .. . 235
234. Colour light rufous; wing 10 inches. *Cerchneis venchroides* (Kestrel).  
 Colour greyish-black above, rufous beneath; wing 9.75 inches.  
*Falco lunulatus* (Little Falcon).
235. Wing about 13 inches or more .. .. . 236  
 Wing not more than 12 inches .. .. . 238
236. Plumage uniform sooty-brown. *Falco subniger* (Black Falcon).  
 Plumage reddish-brown, mottled or streaked. HIERACIDEA. 237
237. Upper surface brown; under surface buff to blackish-brown.  
*H. orientalis* (Brown Hawk).  
 Upper surface sandy; under surface creamy, with fine brown  
 shaft streaks. *H. berigora* (Striped Brown Hawk).
238. Head quite black or plumage nearly uniform grey .. 239  
 Head not black; plumage not uniform .. .. . 240
239. Head black; throat creamy; thighs and under surface barred  
 (female has large arrow-head markings).  
*Falco melanogenys* (Black-checked Falcon).  
 Plumage nearly uniform grey; thighs and under surface uniform.  
*Falco hypoleucus* (Grey Falcon).

240. Wing not less than 10.25 inches; tail not less than 8.5 inches.  
(Under parts in youth buffy-white, each feather crossed by  
two bands of dark brown) . . . . . 24I  
Wing not more than 9.25 inches; tail not more than 7.5 inches.  
*Accipiter cirrhocephalus* (Sparrow-Hawk).
241. Breast rufous brown, with white cross marks.  
*Astur approximans* (Goshawk).  
Breast rust-red, with pale rufous cross marks, back greyer.  
*Astur cruentus* (Lesser Goshawk).
242. Two toes turned to the rear . . . . . 243  
One toe only at the rear . . . . . 320
243. Bill elongate; lower mandible straight. CUCKOOS. 244  
Bill short and very stout, strongly hooked or curved . . . . . 256
244. Wings short and curved to fit body; total length 24 inches; all  
the body except wings black (but in youth reddish-brown).  
*Centropus phasianus* (Coucal).  
Wings long and flat, not fitting body . . . . . 245
245. Total length more than 8.5 inches . . . . . 246  
Total length less than 7.5 inches . . . . . 252
246. Length about 16 or 25 inches . . . . . 247  
Length 8.5 to 13 inches . . . . . 248
247. Length about 25 inches. *Scythrops nova-hollandie* (Channelbill).  
Length 15 to 17 inches; male metallic black, female and young  
mottled brown. *Eudynamis cyanocephala* (Koel).
248. Wings not reaching beyond tail coverts. CUCULUS. 240  
Wings reaching much beyond tail coverts. (Plumage brown and  
breast mottled in youth.) CACOMANTIS. 250
249. Breast whitish, barred with black; length 12.8 inches.  
*C. intermedius* (Oriental Cuckoo).  
Breast uniform grey (mottled brown in youth); length 12 inches.  
*C. pallidus* (Pallid Cuckoo).
250. Tail feathers scalloped with white on both webs . . . . . 25I  
Tail feathers toothed with white on inner web only.  
*C. variolosus* (Square-tailed Cuckoo).
251. Wing 5.4 inches. *C. flabelliformis* (Fan-tailed Cuckoo).  
Wing 4.3 inches; plumage much darker.  
*C. castaneiventris* (Chestnut-breasted Cuckoo).
252. Breast grey or barred; back and wings metallic green.  
CHALCOCOCCYX. 253  
Breast rufous-buff; back ashy-brown.  
*Misocaelius palliolatus* (Black-eared Cuckoo).
253. Much rufous colour on tail feathers . . . . . 254  
Little or no rufous on tail feathers . . . . . 255
254. Crown dark brown; centre of abdomen not barred.  
*C. basalis* (Narrow-billed Bronze-Cuckoo).  
Crown shining green; under surface heavily barred.  
*C. pacilurus* (Rufous-throated Bronze-Cuckoo).
255. Crown and back of neck shining violet.  
*C. plagosus* (Bronze-Cuckoo).  
Crown and back of neck shining green.  
*C. lucidus* (Broad-billed Bronze-Cuckoo).



256. Head crested or forehead feathers elongated. COCKATOOS. 257  
 Head not crested; plumage never white .. .. . 271
257. General colour black .. .. . 258  
 General colour white, grey, or pink .. .. . 263
258. Cheeks entirely naked. *Microglossus aterrimus* (Palm Cockatoo).  
 Cheeks feathered. CALYPTORHYNCHUS. BLACK COCKATOOS. 259
259. Tail banded with red or mottled yellow .. .. . 260  
 Tail banded with white. *C. baudini* (White-tailed Cockatoo).
260. No light-coloured ear coverts .. .. . 261  
 Ear coverts yellow. *C. funereus* (Black Cockatoo).
261. Head and neck, like body, greenish-black .. .. . 262  
 Head and neck brown: length 10.5 inches; wing 14 inches.  
*C. viridis* (Leach Cockatoo).
262. Length about 24 inches: wing 17 inches. (*C. macrorhynchus* has  
 stronger bill.) *C. banksi* (Banksian Cockatoo).  
 Length about 22 inches: wing 14 inches.  
*C. stellatus* (Red-tailed Cockatoo).
263. General colour grey or grey and pink .. .. . 264  
 General colour white or pinkish .. .. . 266
264. General colour grey .. .. . 265  
 General colour grey and pink.  
*Cacatua roseicapilla* (Rose-breasted Cockatoo).
265. Wing 9.6 inches: crest and head scarlet (male) or grey (female).  
*Callocephalon galeatum* (Gang-Gang Cockatoo).  
 Wing 6.5 inches: orange spot on side of head: forehead and cheeks  
 yellow (male) or grey (female).  
*Calopsittacus novaehollandiae* (Cockatoo-Parrakeet).
266. Hook of bill 1 inch long and projecting forward. LICMETIS. 267  
 Hook of bill short and nearly perpendicular. CACATUA. 268
267. Naked skin round eye blue: length 15 inches: wing 11 inches.  
*L. nasica* (Long-billed Cockatoo).  
 Naked skin round eye lead colour: length 17.5 inches: wing 12  
 inches. *L. pastinator* (Western Long-billed Cockatoo).
268. Large upturned crest feathers .. .. . 269  
 Crest of ordinary feathers lengthened .. .. . 270
269. Crest yellow: plumage white. *C. galerita* (White Cockatoo).  
 Crest red and yellow: plumage pink and white.  
*C. leadbeateri* (Pink Cockatoo).
270. Naked skin round eye white and circular: length 14 inches: wing  
 10 inches. *C. sanguinea* (Blood-stained Cockatoo).  
 Naked skin round eye blue, extended into a bare space below:  
 length 16 inches: wing 11 inches.  
*C. gymnopsis* (Bare-eyed Cockatoo).
271. Hook of bill nearly smooth underneath; tongue brushed; tail  
 shorter than wing. LORIKEETS. 272  
 Hook of bill crossed by file-like ridges underneath; tongue smooth;  
 tail longer than wing. PARRAKEETS. 280
272. Bill longer than deep: under side of lower mandible nearly straight 273  
 Bill deeper than long: under side of lower mandible much curved.  
 CYCLOPSITTACUS. 279

273. Bill red or orange ; no red band on forehead .. .. . 274  
 Bill black ; forehead red. GLOSSOPSITTACUS. 277
274. General colour green .. .. . 275  
 Head blue ; chest red. TRICHOGLOSSUS. 276
275. Feathers of under surface with yellow shaft streaks (male) or plain  
 (female). *Ptilosclera versicolor* (Varied Lorikeet).  
 Feathers of under surface yellow with green edges.  
*Psittuteutes chlorolepidotus* (Scaly-breasted Lorikeet).
276. Abdomen blue ; band on nape of neck greenish.  
*T. nova-hollandiæ* (Blue-bellied Lorikeet).  
 Abdomen olive-green ; band on nape of neck reddish.  
*T. rubritorquis* (Red-collared Lorikeet).
277. Crown purple. *G. porphyrocephalus* (Purple-crowned Lorikeet).  
 Crown green like back .. .. . 278
278. Length about 8.6 inches. *G. concinnus* (Musk Lorikeet).  
 Length about 6.4 inches. *G. pusillus* (Little Lorikeet).
279. Forehead feathers red, tipped green ; middle ones bluish ; wing  
 3.9 inches. *C. coxeni* (Blue-faced Lorilet).  
 Forehead feathers all red ; wing 3.5 inches.  
*C. maccoyi* (Red-faced Lorilet).
280. Back uniform in colour ; bill sometimes red .. .. . 281  
 Back not uniform in colour ; bill never red .. .. . 305
281. Total length 13 inches and more ; bill always red .. .. . 282  
 Total length less than 13 inches ; bill not red .. .. . 291
282. Head uniform in colour .. .. . 283  
 Head not uniform in colour .. .. . 285
283. Length about 16 inches ; tail mostly black .. .. . 284  
 Length about 13 inches ; tail green.  
*Ptistes erythropterus* (Red-winged Lory).
284. Head scarlet (male) or dark green (female).  
*Aprosnectus cyanopygius* (King Lory).  
 Head yellow (male) or olive-green (female).  
*Polytelis melanura* (Black-tailed Parrakeet).
285. With yellow collar or red cap or under tail coverts red .. .. . 286  
 No yellow collar, no red cap, under tail coverts not red. POLYTELIS. 290
286. Crown maroon-red (male), under tail coverts only, red (female) ;  
 abdomen violet-blue.  
*Porphyrocephalus spurius* (Red-capped Parrakeet).  
 Crown green or brownish black. BARNARDIUS. 287
287. Forehead red ; abdomen green mostly .. .. . 288  
 Forehead not red or only slightly touched ; abdomen all yellow .. 289
288. Crown green (brownish in female) ; rump light green.  
*B. barnardi* (Mallee Parrakeet).  
 [*Platycercus macgillivrayi* (Macgillivray Parrakeet) has cheeks and  
 ring round eye all blue, lesser wing coverts light blue, like  
 shoulder, collar and broad band on lower breast and abdomen  
 clear yellow, and forehead not red.]  
 Crown brownish-black ; rump not lighter than back.  
*B. semitorquatus* (Yellow-collared Parrakeet).
289. Cheeks dark blue ; black band on neck below collar.  
*B. zonarius* (Yellow-banded Parrakeet).

Cheeks light blue : no black band on neck.

- B. occidentalis* (North Parrakeet).
290. Forehead and rump bluish : cheeks and throat pale rose (colours faint in female). *P. alexandra* (Alexandra Parrakeet).  
General colour green (male has yellow throat and cap); young and female all green, but with cheeks and crown different shade, and often outer tail feathers edged red; length 16 inches.  
*P. barrabandi* (Green-Leek Parrakeet).
291. Centre tail feathers broad : under wing not scarlet .. .. 292  
Centre tail feathers narrow and long; under wing scarlet.  
*Nanodes discolor* (Swift-flying Lorikeet).
292. Outer tail feathers light blue. PSEPHOTUS. 293  
Outer tail feathers yellow (but white in *N. bourkei*, No. 299).  
NEOPIIEMA. 299
293. Forehead blue .. .. 294  
Forehead not blue .. .. 295
294. Under tail coverts all red.  
*P. hamatorrhous* (Crimson-bellied Parrakeet).  
Under tail coverts yellow (or touched with red in youth).  
*P. xanthorrhous* (Yellow-vented Parrakeet).
295. Rump mostly bluish or greenish; head not uniform in colour (female paler in colour) .. .. 296  
Rump mostly reddish (male) or greenish (female); head uniform.  
*P. hamatonotus* (Red-backed Parrakeet).
296. Rump uniform bluish; frontal band red or yellow .. .. 297  
Rump mostly greenish or with dull red band; frontal band green or yellow .. .. 298
297. Forehead band and middle wing coverts red.  
*P. pulcherrimus* (Beautiful Parrakeet).  
Forehead band and middle wing coverts yellow.  
*P. chrysopterygius* (Golden-shouldered Parrakeet).
298. Rump and forehead greenish (may be female *P. chrysopterygius*).  
*P. dissimilis*.  
Rump mostly green; forehead yellow (female has red mark on shoulder). *P. multicolor* (Many-coloured Parrakeet).
299. Upper surface green or olive; abdomen all yellow .. .. 300  
Upper surface brown; abdomen rosy; under tail coverts blue.  
*N. bourkei* (Bourke Grass-Parrakeet).
300. Face and forehead blue .. .. 301  
Forehead only blue (or olive like crown in youth) .. .. 302
301. Chest yellow (male) or light green (female).  
*N. pulchella* (Red-shouldered Grass-Parrakeet).  
Chest scarlet (male) or dark green (female).  
*N. splendida* (Scarlet-chested Grass-Parrakeet).
302. Lores yellow or greenish .. .. 303  
Lores and circle round eye blue. *N. petrophila* (Rock-Parrakeet).
303. Lores and abdomen yellow .. .. 304  
Lores greenish; abdomen with a bright orange spot.  
*N. chrysoastra* (Orange-bellied Grass-Parrakeet).
304. All shoulder and wing coverts deep blue.  
*N. venusta* (Blue-banded Grass-Parrakeet).

- Outer wing coverts blue, middle verditer blue, inner olive-green like back. *N. elegans* (Grass-Parrakeet).
305. Colour grass-green, barred, striped, or spotted; tail with cross bands or bright green .. .. . 306  
Feathers of back bordered with lighter colour, having scale-like appearance; bill notched where lower mandible touches upper; always with large, conspicuously coloured cheek-patches. PLATYCERCUS. 308
306. Total length about 12 inches .. .. . 307  
Total length 7.5 inches. *Melopsittacus undulatus* (Warbling Grass-Parrakeet).
307. Abdomen banded; tail 7.7 inches. *Pezoporos formosus* (Ground-Parrakeet).  
Abdomen uniform yellow; tail 4 inches. *Geopsittacus occidentalis* (Night-Parrakeet).
308. Cheeks blue or white and blue .. .. . 309  
Cheeks white or yellow .. .. . 317
309. Cheeks blue .. .. . 310  
Cheeks white and blue; under tail coverts red .. .. . 314
310. Under parts red (or greenish with under tail coverts red, when immature, also back imperfect) .. .. . 311  
Under parts yellow (whole plumage dusky green when immature, except blue cheeks and red frontal band) .. .. . 313
311. Under parts deep crimson .. .. . 312  
Under parts pale red, feathers fringed with yellow; wing 6.5 inches. *P. adalaidae* (Adelaide Parrakeet).
312. Total length 13.5 inches; wing 6.7 inches. *P. elegans* (Crimson Parrakeet).  
Total length 12 inches; wing 6.3 inches; under parts very dark. *P. nigrescens* (Campbell Parrakeet).
313. Under parts pale yellow; centre tail feathers dull blue. *P. flavcolus* (Yellow Parrakeet).  
Under parts jonquil-yellow; centre tail feathers olive-green. (Mature bird with under tail coverts orange.) *P. flaviventris* (Green Parrakeet).
314. Head red or crown black .. .. . 315  
Head pale yellow; under parts blue .. .. . 316
315. Head red. *P. erythrocephalus* (Red-backed Rosella).  
Crown black. *P. browni* (Smutty Parrakeet).
316. Feathers of back edged straw-yellow; upper half of cheeks white. *P. amathusia* (Blue-checked Parrakeet).  
Feathers of back edged bright yellow; cheeks sometimes all white. *P. pallidiceps* (Pale-headed Parrakeet).
317. Cheeks white; head red (if head yellow, see No. 316) .. .. . 318  
Cheeks yellow .. .. . 319
318. Feathers of back edged yellowish-green. *P. eximius* (Rosella).  
Feathers of back edged gamboge-yellow. *P. splendidus* (Yellow-mantled Parrakeet).
319. Rump green; centre tail feathers green; total length 10.5 inches. *P. icterotis* (Yellow-cheeked Parrakeet).

	Rump olive grey; centre tail feathers dull blue; total length 12.5 inches.	<i>P. xanthogenys</i> (Red-mantled Parrakeet).	
320.	Hind toe shorter than any front toe. . . . .		321
	Hind toe equal to or longer than any front toe, and always with the largest claw . . . . .		372
321.	Bill elongate; or swollen toward tip, with soft base . . . . .		322
	Bill very short and with very wide gape . . . . .		360
322.	Bill long . . . . .		323
	Bill swollen towards tip, basal portion of soft skin, nostrils overhung by a valve.	PIGEONS and DOVES.	336
323.	Bill large and clumsy; lower mandible deep and ascending from centre to tip.	KINGFISHERS.	324
	Bill black and curved; plumage green; wing 4.5 inches; two centre tail feathers project 1.75 inches (male) or .75 inch (female).	<i>Microps ornatus</i> (Bee-eater).	
324.	Length more than 14 inches.	DACELO.	325
	Length less than 14 inches . . . . .		327
325.	Crown rufous-brown in centre, white on sides.		
		<i>D. gigas</i> (Brown Kingfisher or Jackass).	
326.	Crown white, boldly striped brown (male has blue tail) . . . . .		326
	Under surface whitish; length 17 inches; wing 8 inches.	<i>D. leachi</i> (Leach Kingfisher).	
	Under surface not whitish; length 15 inches; wing 7.5 inches.	<i>D. cervina</i> (Fawn-breasted Kingfisher).	
327.	Two long white feathers in tail.	<i>Tanysiptera sylvia</i> (White-tailed Kingfisher).	
	No long white feathers in tail . . . . .		328
328.	General colour greenish or blue; bill mostly black . . . . .		329
	General colour cinnamon; bill yellow.	<i>Syma flavirostris</i> (Yellow-billed Kingfisher).	
329.	Under surface white or dull yellowish (mottled in youth).		
		HALCYON.	330
	Under surface rich orange-rufous (or white, No. 334); inner front toe missing.	ALCYONE.	334
330.	Sides of crown blue; under surface white . . . . .		331
	Sides of crown greenish or dusky; under surface yellowish . . . . .		332
331.	Large white patch on outstretched wings (female has collar incomplete).	<i>H. macleayi</i> (Forest Kingfisher).	
	No light patch on wings; bill 1.6 inches; wing 3.7 inches.	<i>H. westralasianus</i> (Western Sacred Kingfisher).	
332.	Crown uniform colour . . . . .		333
	Crown streaked white.	<i>H. pyrrhopygius</i> (Red-backed Kingfisher).	
333.	Upper surface green.	<i>H. sanctus</i> (Sacred Kingfisher).	
	Upper surface dusky olive.	<i>H. sordidus</i> (Mangrove Kingfisher).	
334.	Length more than 6 inches; under surface rich colour . . . . .		335
	Length 4.8 inches; under surface white.	<i>A. pusilla</i> (Little Kingfisher).	
335.	Breast in centre rufous like lower throat; bill 1.8 inches.	<i>A. azurea</i> (Blue Kingfisher.)	
	Breast often blue, continued from sides of neck; bill 2 inches.	<i>A. pulchra</i> (Purple Kingfisher).	

336. Head crested .. .. . 337  
 Head not crested .. .. . 341
337. Length 15 inches. *Lopholanius antarcticus* (Topknot Pigeon).  
 Length less than 13 inches. .. .. . 338
338. Brown or rufous in colour: tail short. LOPHOPHAPS. 339  
 Grey in colour: tail long. *Ocyphaps lophotes* (Crested Pigeon).
339. Plumage cinnamon colour: thin bands across chest .. .. . 340  
 Plumage rich brown: chest chestnut: abdomen light buff.  
*L. plumifera* (Plumed-Pigeon).
340. Centre of abdomen white.  
*L. leucogaster* (White-bellied Plumed-Pigeon).  
 Centre of abdomen like chest, but separated by thin bands of black  
 and grey. *L. ferruginea* (Red Plumed-Pigeon).
341. Metallic colour-patch on wing .. .. . 342  
 No shining patch on wing .. .. . 349
342. Wing coverts not shining golden green .. .. . 343  
 Wing coverts all shining golden green.  
*Chalcophaps chrysochlora* (Little Green-Pigeon).
343. Wing more than 6 inches long .. .. . 344  
 Wing 6 inches and less .. .. . 346
344. Plumage mottled and patched: forehead yellowish (male), whitish  
 (female). PHAPS. 345  
 Uniform rufous above and blue-grey below (forehead white only in  
 male). *Histiophaps histrionica* (Flock-Pigeon).
345. Throat whitish: breast brownish: wing 8 inches.  
*P. chalcoptera* (Bronze-wing).  
 Throat chestnut: breast grey: wing 6.5 inches.  
*P. elegans* (Brush Bronze-wing).
346. Primary feathers of wing more than 1 inch longer than secondaries. PETROPHASSA. 347-  
 Primary feathers of wing less than 1 inch longer than secondaries. GEOPHAPS. 348
347. Throat all whitish. *P. rufipennis* (Chestnut-quilled Pigeon).  
 Throat black, with feathers tipped white.  
*P. albipennis* (Rock-Pigeon).
348. Loes and eyebrows black, also black line under eyes: wing 6 inches.  
*G. scripta* (Partridge-Pigeon).  
 Loes and eyebrows white: wing 5.3 inches.  
*G. smithi* (Naked-eyed Partridge-Pigeon).
349. Total length 14 inches or over .. .. . 350  
 Total length less than 12 inches .. .. . 355
350. Colour dark grey and white or all rufous-brown .. .. . 351  
 Colour black and white: or green, purple, and yellow .. .. . 352
351. Plumage dark grey and white: wing 8.5 inches.  
*Leucosarcia picata* (Wonga-Wonga Pigeon).  
 Plumage all rufous-brown, with large tail.  
*Macropygia phasianella* (Pheasant-tailed Pigeon).
352. Plumage black and white .. .. . 353  
 Plumage green, purple, and yellow. PTILOPUS (2). 354
353. Plumage mostly white with black wing-patches.  
*Myristicivora spilorrhoea* (Nutmeg-Pigeon).

- Back and wings black : head and under surface white.  
*Columba leucomela* (White-headed Fruit-Pigeon).
354. Length 16 inches : wing 9 inches.  
*P. magnifica* (Purple-breasted Fruit-Pigeon).  
 Length 14 inches : wing 7.5 inches.  
*P. assimilis* (Allied Fruit-Pigeon).
355. Plumage mostly green. Ptilopus (3). 356  
 Plumage brownish or greyish. GEOPELIA. DOVES. 358
356. Crown purple. *P. superbus* (Purple-crowned Fruit-Pigeon).  
 Crown rosy colour .. .. . 357
357. Yellow colour in front of pale rose abdomen.  
*P. ewingi* (Rose-crowned Fruit-Pigeon).  
 No yellow on chest ; abdomen rosy purple and orange.  
*P. swainsoni* (Red-crowned Fruit-Pigeon).
358. Length more than 10 inches ; wing 5.5 inches.  
*G. humeralis* (Barred-shouldered Dove).  
 Length less than 10 inches ; wing less than 4 inches .. .. 359
359. Length about 8 inches : no naked skin round eye.  
*G. tranquilla* (Ground-Dove).  
 Length about 7 inches : naked scarlet skin round eye.  
*G. cuneata* (Little Dove).
360. Plumage bluish : bill and legs red : length 10.5 inches ; light blue  
 patch on wing.  
*Eurystomus australis* (Dollar-Bird or Roller).  
 Plumage not blue ; bill and legs not red .. .. 361
361. Total length more than 9 inches .. .. 362  
 Total length less than 9 inches .. .. 368
362. Length less than 12 inches. NIGHTJARS (3). 363  
 Length more than 12 inches. PODARGUS. FROGMOUTHS. 365
363. Strong bristles round gape ; wing 7.5 inches.  
*Caprimulgus macrurus* (Large-tailed Nightjar).  
 No conspicuous bristles round gape. EUROSTOPUS. 364
364. Wing about 10 inches : abdomen not uniform.  
*E. albigularis* (White-throated Nightjar).  
 Wing less than 9 inches : abdomen uniform.  
*E. argus* (Spotted Nightjar).
365. Tail more than 10 inches .. .. 366  
 Tail less than 10 inches .. .. 367
366. Wing 11 inches. *P. papuensis* (Plumed Frogmouth).  
 Wing about 8 inches. *P. marmoratus* (Marbled Frogmouth).
367. Wing 9.5 to 10.5 inches. *P. strigoides* (Fawny Frogmouth).  
 Wing about 8 inches. *P. phalaenoides* (Freckled Frogmouth).
368. Wings not as long as body. EGOTHELES. NIGHTJARS. 369  
 Pointed wings equal in length to whole body. SWIFTS. 370
369. Colour blackish-grey. *E. nova-hollandiae* (Owlet Nightjar).  
 Colour rufous. *E. rufa*. (Rufous Nightjar).
370. Wing 7 inches and over .. .. 371  
 Wing about 4.4 inches. *Callocalia francica* (Grey-rumped Swiftlet).
371. Throat and rump white : wing 7.2 inches.  
*Micropus pacificus* (White-rumped Swift).

- Throat and under tail coverts white; wing 8.2 inches.  
*Chactura caudacuta* (Spine-tailed Swift).
372. More than 24 inches in length .. .. . 373  
 Less than 22 inches in length .. .. . 378
373. Head and neck almost naked; large vascular wattles at base of neck. CATHETURUS. BRUSH-TURKEYS. 374  
 Head and neck feathered; no wattle .. .. . 375
374. Lower neck red; wattles yellow. *C. lathamii* (Brush-Turkey).  
 Lower neck and wattles purplish-white (female has no wattle).  
*C. purpuricollis* (Barnard Brush-Turkey).
375. Plumage mottled; tail short. *Lipoa ocellata* (Mallee-Fowl).  
 Plumage uniform; tail long, with many wire-like feathers (male) or all feathers broad and fully webbed (female and young male). MENURA. LYRE-BIRDS. 376
376. Back ashy-brown (male with curious lyre-shaped tail) .. .. . 377  
 Back rufous-brown; wing 9.5 inches. *M. alberti* (Albert Lyre-Bird).
377. Outer tail feather white beneath, with broad chestnut bars; wing 10.5 inches. *M. victoriæ* (Victoria Lyre-Bird).  
 Outer tail feather ashy beneath, with reddish-brown bars; wing 11 inches. *M. superba* (Lyre-Bird).
378. Head and neck bare of feathers or partly so. Blue naked skin around and behind eye. Pendent lobes of wattle beneath each ear. Plumage dark brown, with fine white shaft streaks to feathers. Throat light rufous and abdomen striped. All from 8.5 to 18 inches long; tail nearly as long or longer than wing .. 379  
 Head not bare; no wide bare skin round eye; no pendent wattles; plumage various .. .. . 391
379. Throat and upper chest light rufous; abdomen streaked. ACANTHOCHLERA (2). 380  
 Throat and upper chest not light rufous .. .. . 381
380. Wing 4.8 inches; ear coverts of white spines. *A. rufigularis* (Spiny-cheeked Honey-eater).  
 Wing 4 inches; ear coverts of yellow spines (young?). *A. flavacanthus*.
381. With pendent lobes of wattle under each ear. ACANTHOCHLERA (2). 382  
 No pendent lobes of wattle under each ear .. .. . 383
382. Wattle 1 inch long and yellow (may be shorter in youth). *A. inauris* (Yellow Wattle-Bird).  
 Wattle .25 inch long and red. (Crown not all streaked in youth.) *A. carunculata* (Red Wattle-Bird).
383. Plumage dark brown, with fine white shaft streaks to feathers of back and breast. (Crown not streaked in youth.) ACANTHOCHLERA (2). 384  
 Plumage brownish or greenish; head and neck mostly bare or with naked skin round eye .. .. . 385
384. Bill 1.25 inches; wing 5.3 inches; crown of head and neck not boldly streaked. *A. lunulata* (Little Wattle-Bird).  
 Bill .8 to 1 inch; wing 4.6 to 5.6 inches; crown of head and neck streaked. *A. mellivora* (Brush Wattle-Bird).
385. Naked blue skin (yellowish in youth) behind eye; throat black; back green. ENTOMYZA. 386



- Head and neck mostly bare of feathers. PHILEMON. 387
386. No large white patch on wing.  
*E. cyanotis* (Blue-faced Honey-eater).  
 Basal half of primaries white.  
*E. albigennis* (White-quilled Honey-eater).
387. Head and neck partly feathered .. .. . 388  
 Head and neck quite bare.  
*P. corniculatus* (Friar-Bird or Leatherhead).
388. Large hump at base of beak .. .. . 389  
 No hump at base of beak .. .. . 390
389. Sides of neck bare. *P. buccroides* (Helmeted Friar-Bird).  
 Sides of neck covered with silvery feathers.  
*P. argenteiceps* (Silvery-crowned Friar-Bird).
390. Cheeks and round eye bare: throat yellowish (but not so in youth):  
 wing 5.25 inches: bill 1.25 inches.  
*P. citreogularis* (Yellow-throated Friar-Bird).  
 Smaller in size, but with larger bill. *P. sordidus* (Little Friar-Bird).
391. Length 13 to 22 inches .. .. . 392  
 Length less than 13 inches .. .. . 408
392. Plumage olive and chestnut: length 14 to 17 inches.  
*Megapodius duperrcyi* (Scrub-Fowl).  
 Plumage black, black and white, or sombre: tail more than half  
 length of wing .. .. . 393
393. Plumage shining black. RAVEN and CROWS. 394  
 Plumage black and white or sombre .. .. . 396
394. Down at base of neck feathers snow white. CORVUS. 395  
 Down at base of neck feathers dusky-brown: bill 2.5 inches: wing  
 14.7 inches. *Corone australis* (Raven).  
 395. Bill 2.2 inches: wing 13.7 inches. *C. coronoides* (Crow).  
 Bill 1.85 inches: wing 12.3 inches. *C. bennetti* (Small-billed Crow).
396. Plumage black, with white patches on wings only.  
*Corcorax melanorhamphus* (White-winged Chough or Jay).  
 Plumage sooty or black and white. .. .. . 397
397. Plumage sooty and white: tail tipped white.  
 STREPERA. CROW-SHRIKES. 398  
 Plumage black and white: tail tipped black.  
 GYMNORHINA. MAGPIES. 404
398. Under tail coverts white .. .. . 399  
 Under tail coverts dusky. *S. fuliginosa* (Black Crow-Shrike).
399. Base of tail feathers blackish .. .. . 400  
 Base of tail feathers white. *S. graculina* (Pied Crow-Shrike).
400. Large white patch on primaries of wing .. .. . 401  
 No white patch on primaries of wing.  
*S. melanoptera* (Black-winged Crow-Shrike).
401. Total length more than 19 inches .. .. . 402  
 Total length less than 19 inches .. .. . 403
402. Wing 11.9 inches: tail 9.8 inches: wing feathers not tipped white.  
*S. arguta* (Hill Crow-Shrike).  
 Wing 10.75 inches: tail 8.75 inches: wing feathers tipped white.  
*S. cuneicaudata* (Grey Crow-Shrike).

403. White tips to primaries and secondaries of wing.  
*S. plumbea* (Leaden Crow-Shrike).  
 No white tips to primaries and secondaries.  
*S. intermedia* (Lesser Crow-Shrike).
404. Black band across white back .. .. . 405  
 Back white from head to tail (but grey or mottled black in female  
 or young) .. .. . 406
405. Bill 2.4 inches. *G. longirostris* (Long-billed Magpie).  
 Bill 2 inches. *G. tibicen* (Black-backed Magpie).
406. Length 15 inches; wing 10 inches or over; tarsus more than 2 inches 407  
 Length 13 inches; wing 9.6 inches; tarsus less than 2 inches.  
*G. hyperleuca* (Lesser White-backed Magpie).
407. Wing 11 inches; bill 2.2 inches. (Back grey in female and young.)  
*G. leuconota* (White-backed Magpie).  
 Wing 10 inches; bill 2.1 inches. (Back mottled in female and black  
 in young.) *G. dorsalis* (Varied-backed Magpie).
408. Total length 10 to 13 inches (including two *Graucalus*, light grey  
 birds, 9.5 inches long, No. 440) .. .. . 409  
 Total length 10 inches and less (including *Cinclosoma punctatum*,  
 No. 628, a spotted bird with white or shining throat, and  
*Pomatorhinus temporalis*, No. 613, dark brown, with curved  
 bill; both 10.5 inches long) .. .. . 450
409. Bill about 1.5 inches, straight and stout, with tip curved and thorn-  
 like (plumage brownish in youth, and with base of bill light  
 brown). CRATICUS. BUTCHER-BIRDS. 410  
 Mandibles about equal, no thorn-like tip .. .. . 417
410. Plumage all black or black and white .. .. . 411  
 Plumage greyish or brownish .. .. . 414
411. Plumage all black (the female when immature is all brown) .. 412  
 Plumage black and white .. .. . 413
412. Butts of feathers dull white; wing 7.6 inches.  
*C. quoyi* (Black Butcher-Bird).  
 Butts of feathers slate-brown; wing 5.5 inches.  
*C. spaldingi* (Spalding Butcher-Bird).
413. Bill 1.9 inches; wing 7.1 inches.  
*C. nigrigularis* (Black-throated Butcher-Bird).  
 Bill 1.5 inches; wing 6.5 inches. *C. picatus* (Pied Butcher-Bird).
414. Back and flanks grey or brownish; lores light; tip of outer web of  
 tail feathers mostly blackish .. .. . 415  
 Back silvery grey; flanks, like abdomen, white; lores blackish;  
 whole tips of tail feathers white.  
*C. argentus* (Silver-backed Butcher-Bird).
415. Back and sides of upper breast brownish; only three secondaries  
 edged white .. .. . 416  
 Back and sides of upper breast greyish; many wing feathers edged  
 with white. *C. leucopterus* (White-winged Butcher-Bird).
416. Length 10 to 10.5 inches; wing 5.5 inches; bill 1.25 to 1.5 inches.  
*C. destructor* (Butcher-Bird).  
 Smaller measurements and less white on wings and tail.  
*C. cinereus* (Grey Butcher-Bird).

417. Very curved black bill, 1.5 inches or more. (Male with resplendent metallic plumage, female brownish.) BIRDS OF PARADISE. 418  
 Bill not 1.5 inches or not much curved .. .. . 422
418. Tarsus equal to or longer than bill. *Manucodia gouldi* (Manucode).  
 Tarsus shorter than bill. RIFLE-BIRDS. 419
419. Length more than 10 inches .. .. . 420  
 Length 9 inches : wing 5 inches.
420. Length about 11 inches : wing about 6 inches .. .. . 421  
 Length about 12 inches : wing 6.6 inches. (Probably in New Guinea only.)  
*Ptilorhis victoria* (Victoria Rifle-Bird).
421. Length 11.2 inches : wing 6 inches.  
*Ptilorhis paradisca* (Rifle-Bird).  
 Length 11.5 inches : wing 5.9 inches : throat with shining scales.  
*Craspedophora alberti* (Albert Rifle-Bird).
422. Plumage black and white : face black (male) or white (female).  
*Grallina picata* (Magpie-Lark).  
 Plumage not black and white .. .. . 423
423. Plumage black with long forked tail. *Chibia bracteata* (Drongo).  
 Plumage not as specified .. .. . 424
424. Plumage glossy blue-black, or greenish, or breast boldly streaked  
 with brown or black .. .. . 425  
 Plumage not blue-black or greenish : breast not boldly streaked .. 432
425. Plumage all green, spotted below. AELUREDUS. CAT-BIRDS. 426  
 Plumage blue-black, or greenish, or streaked .. .. . 427
426. Crown of head spotted white. *A. maculosus* (Spotted Cat-Bird).  
 Crown of head faintly marked brown. *A. viridis* (Cat-Bird).
427. Plumage blue-black (male) or greenish with half-moon marks on  
 breast (female and young) : wing 6.2 inches.  
*Ptilonorhynchus violaceus* (Satin Bower-Bird).  
 Plumage greenish or brownish : breast streaked or uniform .. 428
428. Bill orange colour. ORIOLUS. ORIOLES. 429  
 Bill black : back green (male) or brown (female).  
 SPIECOTHERES. FIG-BIRDS 431
429. Breast white with bold streaks of black .. .. . 430  
 Breast greenish with thin streaks of black.  
*O. flavicinctus* (Yellow Oriole).
430. Bill 1.2 inches : wing 6 inches. *O. viridis* (Oriole).  
 Bill 1.3 inches : wing 5.7 inches *O. affinis* (Northern Oriole).
431. Wing 6.2 inches : breast green (male) or crown dark (female).  
*S. maxillaris* (Fig-Bird).  
 Wing 5.7 inches : breast yellow (male) or crown light (female).  
*S. flaviventris* (Yellow-bellied Fig-Bird).
432. Upper and under surfaces similar dark grey ; wings black : tail  
 brown. *Struthideca cinerea* (Grey Jumper).  
 Upper and under surfaces not dark grey .. .. . 433
433. Plumage uniform light grey above, and grey, white, or barred beneath.  
 CUCKOO-SHRIKES. 434  
 Plumage not uniform light grey above and not grey, white, or barred  
 beneath .. .. . 441

434. Length 13 inches or more : tail and wings jet black.  
*Pteropodocys phasianella* (Ground Cuckoo-Shrike).  
 Length less than 12.5 inches. GRAUCALUS. 435
435. Wing about 7.5 inches or more .. .. . 436  
 Wing about 6.5 inches or less .. .. . 437
436. Bill .9 inch or more. *G. melanops* (Black-faced Cuckoo-Shrike).  
 Bill .8 inch or less. *G. parvirostris* (Small-billed Cuckoo-Shrike).
437. Chest grey or white : abdomen plain or barred .. .. 438  
 Chest, like throat, black : abdomen rayed with black.  
*G. mentalis* (Little Cuckoo-Shrike), immature.
438. Length 10 to 11 inches .. .. . 439  
 Length 10 inches or less (may be only 9.5 inches) .. .. 440
439. Lower part of abdomen and under tail coverts white.  
*G. mentalis* (Little Cuckoo-Shrike), adult.  
 Lower part of abdomen and under tail coverts dark slate : lores  
 only black.  
*Edoliisoma tenuirostre* (Jardine Caterpillar-eater), adult male.  
 (For female see No. 634.)
440. Under surface all pure white.  
*G. hypoleucus* (White-bellied Cuckoo-Shrike).  
 Under surface barred with black : throat and chest grey, like back.  
*G. lineatus* (Barred Cuckoo-Shrike).
441. Plumage brown or blackish, streaked or spotted on back with  
 lighter colour. BOWER-BIRDS (some). 442  
 Upper surface rich russet or olive-brown, feathers tipped with black  
 crescents. GEOCICHLA. GROUND-THRUSHES. 447
442. Upper surface mottled : abdomen plain.  
 CHLAMYDERA. BOWER-BIRDS. 443  
 Upper surface olive-brown : abdomen lightly streaked : length  
 10.5 inches : bill 1.1 inches : wing 5.6 inches : tail 3.7 inches :  
 tarsus 1.3 inches.  
*Scenopæus dentirotis* (Tooth-billed Bower-Bird).
443. Crown quite uniform (lilac tuft of feathers on back of neck in male  
 birds) .. .. . 444  
 Crown spotted (lilac tuft of feathers on back of neck in male birds) .. .. 445
444. Length 12.8 inches : wing 7 inches.  
*C. nuchalis* (Great Bower-Bird).  
 Length 11.3 inches : wing 5.65 inches.  
*C. cerviniventris* (Fawn-breasted Bower-Bird).
445. Length 13 inches : wing 7 inches.  
*C. orientalis* (Queensland Bower-Bird).
446. Length 10 or 11 inches : wing about 5.7 inches .. .. 446  
 Throat lighter than crown : abdomen grey.  
*C. maculata* (Spotted Bower-Bird).  
 Throat darker than crown : abdomen buff.  
*C. guttata* (Yellow-spotted Bower-Bird).
447. Length about 10.5 inches : wing 5.5 inches .. .. 448  
 Length about 9.5 inches : wing 4.8 inches .. .. 449
448. Bill 1.1 inches. *G. lunulata* (Ground-Thrush).  
 Bill 1.2 inches (darker plumage).  
*G. macrorhyncha* (Large-billed Ground-Thrush).

449. Under tail coverts light rufous : outermost tail feathers tipped with 1 inch of white. *G. heinii* (Russet-tailed Ground-Thrush).  
Under tail coverts ochreous : outermost tail feather pale brown, with wedge-shaped mark on inner web and tip white.  
*G. cucullata* (Broadbent Ground-Thrush).
450. Very bright colours : back green : shoulder blue : abdomen partly scarlet : length from 6 to 8.5 inches. PITTA. 451  
Colours various but not as specified .. .. . 453
451. Crown mostly chestnut : abdomen not all black .. .. . 452  
Head and breast black : lower abdomen scarlet : length 6 inches.  
*P. iris* (Rainbow Pitta).
452. Length 7.5 to 8.5 inches : breast fawn. *P. strepitans* (Noisy Pitta).  
Length 7 inches : breast banded greyish-blue.  
*P. mackloti* (Blue-breasted Pitta).
453. Outside feather of wing as long or longer than others, and forming the point of wing (including *Mirajra*, No. 471). An extremely small first primary is found in *Artamus*, No. 461, and in Finches, No. 474, but it is not much longer than the under wing coverts .. .. . 454  
First primary of wing much reduced in size and often the second also. Tip of wing not formed by a strong outside feather 503
454. Plumage all shining black (breast in youth white with black stripes) : length 9.2 inches. *Calornis metallica* (Shining Starling).  
Not 9 inches in length : plumage not all shining black .. .. . 455
455. Under tail coverts not scarlet .. .. . 456  
Under tail coverts scarlet : back blue-black (male) or brown (female) : length 3.4 to 3.9 inches.  
*Dicaeum hirundinaceum* (Mistletoe-Bird).
456. Bill short, broad, and flat : wings long and pointed : tail forked .. 457  
Bill not flat : tail short, square, or pointed .. .. . 461
457. Plumage blue-black, white, and buff .. .. . 458  
Plumage black and white : wing 4 inches.  
*Cheramacca leucosternum* (Black-and-White Swallow).
458. Crown all or partly rufous : rump creamy.  
PETROCHELIDON. MARTINS. 459  
Crown and rump blue-black, like back. HIRUNDO. SWALLOWS. 460
459. Crown all rufous : length 4.5 inches. *P. ariel* (Fairy Martin).  
Forehead only rufous : length 5.1 inches.  
*P. nigricans* (Tree Martin).
460. Ear coverts blue-black, like back *H. neoxena* (Swallow).  
Ear coverts brick-red, like face. *H. javanica* (Eastern Swallow).
461. Long, pointed wings. ARTAMUS. WOOD-SWALLOWS. 462  
Wings short .. .. . 470
462. Plumage chocolate colour or sooty and white (mottled in youth) .. 463  
Plumage mostly sooty or grey or grey and chestnut .. .. . 465
463. Breast and rump similar to head .. .. . 464  
Breast and rump white.  
*A. leucogaster* (White-rumped Wood-Swallow).
464. Length about 6.8 inches. *A. sordidus* (Wood-Swallow).  
Length about 4.8 inches. *A. minor* (Little Wood-Swallow).

465. Abdomen grey or white .. .. . 466  
 Abdomen chestnut. *A. superciliosus* (White-browed Wood-Swallow).
466. Rump and tail black and not like back .. .. . 467  
 Rump and tail grey, like back.  
*A. personatus* (Masked Wood-Swallow).
467. Under tail coverts mostly black .. .. . 468  
 Under tail coverts white.  
*A. hypoleucus* (White-bellied Wood-Swallow).
468. Narrow black band across forehead; chin and upper throat black 469  
 No narrow black band across forehead; chin only black.  
*A. venustus* (White-vented Wood-Swallow).
469. Outer tail feather with large white tip.  
*A. melanops* (Black-faced Wood-Swallow).  
 Outer tail feather with outer web black nearly to tip.  
*A. cinereus* (Grey-breasted Wood-Swallow).
470. Upper surface mottled tawny-brown; nail of hind toe very long  
 (at least .25 inch) .. .. . 471  
 Plumage various; nail of hind toe not as long as rest of toe .. 474
471. Length about 5 inches; bill stout and strong.  
 MIRAFRA. BUSH-LARKS. 472  
 Length about 6 inches; bill ordinary.  
*Anthus australis* (Ground-Lark or Pipit).
472. Plumage greyish-brown; shoulder of wing rich rufous.  
*M. secunda* (Lesser Bush-Lark).
473. Plumage tawny-brown; wing with dark markings .. .. . 473  
 Head and back with black centres to feathers; bill .45 inch.  
*M. horsfieldi* (Bush-Lark).
474. Head and back all sandy rufous; bill .55 inch.  
*M. woodwardi* (Rufous Bush-Lark).
474. Crown uniform black or grey; or streaked or spotted with white (or  
 mottled olive); bill and tail very short.  
 PARDALOTUS. DIAMOND-BIRDS. 475  
 Crown not uniform black or marked with white; bill stout and  
 strong. FINCHES. 483
475. Crown uniform black (or greyish in youth) .. .. . 476  
 Crown black, streaked or spotted white or mottled olive .. .. . 477
476. Rump dark brown; throat and chest yellow.  
*P. melanocephalus* (Black-headed Pardalote).  
 Rump yellowish; throat yellow; chest white.  
*P. uropygialis* (Chestnut-rumped Pardalote).
477. Crown black, streaked or spotted white (greyish or spotted yellow  
 in immature birds) .. .. . 478  
 Crown mottled olive like back; no colour on wing, but each feather  
 tipped white. *P. quadragintus* (Forty-spotted Pardalote).
478. Crown streaked with white; always a few yellow or red feathers at  
 base of primaries .. .. . 479  
 Crown spotted white (or yellow in youth) .. .. . 481
479. Third or third and fourth primary edged with white .. .. . 480  
 Nearly all primaries edged white, making conspicuous patch.  
*P. ornatus* (Red-tipped Pardalote).

480. Small yellow patch on wing : third primary edged white.  
*P. affinis* (Yellow-tipped Pardalote).  
 Small red patch on wing : third primary edged white, sometimes  
 third and fourth. *P. assimilis* (Orange-tipped Pardalote).
481. White spot in front of eye : primaries all black except tips .. 482  
 Scarlet spot in front of eye : primaries edged rufous.  
*P. rubricatus* (Red-browed Pardalote).
482. Rump mostly chestnut. *P. punctatus* (Spotted Pardalote).  
 Rump all yellow. *P. xanthopygius* (Yellow-rumped Pardalote).
483. Centre pair of tail feathers with thread-like points. POEPHILA. 484  
 Centre pair of tail feathers not elongated .. .. 490
484. Back green .. .. 485  
 Back brown .. .. 487
485. Head yellow. *P. armiliana* (A phase of *P. gouldiae*).  
 Head not yellow .. .. 486
486. Forehead and face black. *P. gouldiae* (Gouldian Finch).  
 (This is the youthful stage of the following species.)  
 Forehead and face red. *P. mirabilis* (Scarlet-headed Finch).
487. Head brown, except for black circle around yellow bill .. 488  
 Head grey ; throat black .. .. 489
488. Patch on side of head white. *P. leucotis* (White-eared Finch).  
 No white on side of head. *P. personata* (Masked Finch).
489. Bill black. *P. cincta* (Black-throated Finch).  
 Bill yellow. *P. acuticauda* (Long-tailed Finch).
490. Plumage nearly all crimson. *Neochmia phacton* (Crimson Finch).  
 Plumage not crimson .. .. 491
491. Rump crimson : bill red (but black in youth) .. 492  
 Rump not crimson .. .. 496
492. Plumage almost uniform tone .. .. 493  
 Throat, chest, and abdomen different from back .. 495
493. Plumage uniform olive : eyebrow red.  
*Egitha temporalis* (Red-browed Finch).  
 Plumage very finely barred with black lines : lores black.  
 ZON. EGINTHUS. 494
494. Red spot behind eye ; abdomen spotted.  
*Z. ocellatus* (Red-eared Finch).  
 No red spot behind eye ; abdomen similar to throat.  
*Z. bellus* (Fire-tailed Finch).
495. Under surface black, with scarlet and white spots.  
*Emblema picta* (Painted Finch).  
 Under surface mostly white : chest band and sides black ; white  
 spots only on black sides.  
*Staganopleura guttata* (Spotted-sided Finch).
496. Face and bill red, face spotted with white (female has very little  
 red on face). *Bathilda ruficauda* (Red-faced Finch).  
 Face and bill not red .. .. 497
497. Forehead plum colour. *Aidemosyne modesta* (Plum-head Finch).  
 Forehead not plum colour .. .. 498
498. Crown and back brown ; upper tail coverts not barred .. 499

- Crown grey : upper tail coverts white and barred : ear coverts chestnut (male) or grey (female).  
*Taniopygia castanotis* (Chestnut-eared Finch).  
 499. Back and wings almost uniform. MUNIA. 500  
 Back finely marked with darker colour : wings freckled grey. STICTOPTERA. 502
500. Abdomen pure white : breast fawn, with black band.  
*M. castaneithorax* (Chestnut-breasted Finch).  
 Abdomen not white : no black line on breast . . . . . 501
501. Under surface plain ; head grey.  
*M. flaviprymna* (Yellow-rumped Finch).  
 Under surface with white marks on chest : throat and ears black.  
*M. pectoralis* (White-breasted Finch).
502. Rump white. *S. bichenorii* (Banded Finch).  
 Rump black. *S. annulosa* (Black-ringed Finch).
503. Plumage chocolate or rufous ; feathers of upper surface very finely marked with wavy black lines : wing 2.5 to 3 inches.  
 ATRICHA. SCRUB-BIRDS. 504  
 Plumage various : feathers not finely waved with black . . . . . 505
504. Length about 8.5 inches : black patch on whitish throat.  
*A. clamosa* (Noisy Scrub-Bird).  
 Length about 6.8 inches : orange patch on abdomen.  
*A. rufescens* (Rufous Scrub-Bird).
505. Plumage black and yellow or olive-brown and yellow. Plumage brown or mottled brown, with yellow or black crown : length 8 to 10 inches . . . . . 506  
 Plumage various, but not as specified . . . . . 511
506. Yellow in the wings . . . . . 507  
 No yellow in the wings . . . . . 510
507. Around cheeks and eyes bare and warty.  
*Meliphaga phrygia* (Warty-faced Honey-eater).  
 Around cheeks and eyes not bare . . . . . 508
508. Plumage olive-brown and yellow . . . . . 509  
 Plumage black and yellow. *Scriculus melinus* (Regent-Bird), male.
509. Long feathers at back of head : plumage not mottled ; length 8.25 inches : wing 11.5 inches.  
*Prionodura newtoni* (Golden Bower-Bird).  
 No long feathers on head : plumage mottled black and yellow or brown. *Scriculus melinus* (Regent-Bird), immature male.
510. Plumage mottled brown and black : crown black : wing 5.3 inches.  
*Scriculus melinus* (Regent-Bird), female.  
 Plumage mottled brown and black : crown not black.  
*Scriculus melinus* (Regent-Bird), young male.
511. Plumage brownish or greenish, with prominent crest . . . . . 512  
 Not crested . . . . . 518
512. Plumage brown, with pointed crest . . . . . 513  
 Plumage greenish or blackish-green . . . . . 514
513. Plumage uniform, except for large white tips to tail feathers : length 6.5 inches. *Sphenostoma cristatum* (Wedgebill).  
 Chest black (male) or brown (female) : length 8.5 inches.  
*Oreoica cristata* (Bell-Bird).



514. Back green; abdomen yellow or white; throat black (male) or green (female). FALCUNCULUS. SHRIKE-TITS. 515  
Plumage all blackish-green. PSOPHOIDES. COACHWHIP-BIRDS. 516
515. Abdomen yellow. *F. frontatus* (Yellow-bellied Shrike-Tit).  
Abdomen white. *F. leucogaster* (White-bellied Shrike-Tit).
516. Length about 10 inches. (Crown brownish in youth) .. .. 517  
Length about 6.25 inches. (Male has white marks on side of throat and chest, which female has not.)  
*P. nigrogularis* (Black-throated Coachwhip-Bird).
517. Lateral feathers of tail tipped white; wing 3.7 inches; tail 5.3 inches. *P. crepitans* (Coachwhip-Bird).  
Lateral feathers of tail tipped brown; wing 3.95 inches; tail 5 inches. *P. lateralis*.
518. Length 7 to 10 inches; plumage olive-green, greyish, or yellowish-brown; bill yellow; small patch of naked yellow skin behind ear. MANORHINA. MINERS. 519  
Bill not yellow; no naked yellow skin behind ear .. .. 523
519. General colour greyish or yellowish-brown; length 9 to 10 inches 520  
General colour olive-green; length about 7 inches.  
*M. melanophrys* (Bell Miner).
520. General colour greyish .. .. 521  
General colour yellowish-brown; ear coverts black, edged silky white; wing 4.8 inches. *M. lutca* (Yellow Miner).
521. Rump white; wing 5.2 inches. *M. flavigula* (Yellow-throated Miner).  
Rump not white .. .. 522
522. Crown olive; ear coverts black; wing 5.5 inches. *M. obscura* (Dusky Miner).  
Crown black; forehead white; wing 5.2 to 5.8 inches. *M. garrula* (Noisy Miner).
523. Plumage ashy; or black and white streaked; bright yellow in the wings; length 5.5 to 7 inches. MELIORNIS. 524  
Plumage otherwise .. .. 528
524. Plumage black and white streaked .. .. 525  
Plumage ashy above; black crescent on whitish breast (male) or under surface smoky (female).  
*M. australasiana* (Crescent Honey-eater).
525. Feathers of fore-neck short and entirely black .. .. 526  
Feathers of fore-neck long, black, edged and tipped white .. 527
526. Bill .8 inch long; wing 2.75 inches. *M. sericca* (White-checked Honey-eater).  
Bill 1 inch; wing 3 inches; cheek and ear patch very large and pointed. *M. mystacalis* (Moustached Honey-eater).
527. Bill about .7 inch; cheek and forehead marks large. *M. nove-hollandia* (White-bearded Honey-eater).  
Bill .8 to .9 inch; cheek and forehead marks small. *M. longirostris* (Long-billed Honey-eater).
528. Plumage mostly olive above; yellowish or streaked below; other colours white and brown; ear coverts always different from rest of head; tail forked. PTILOTIS. 529  
Plumage not as specified .. .. 553

529. Regions of eye and ear bare of feathers .. .. 530  
 Regions of eye and ear not bare .. .. 531
530. Breast uniform. *P. frenata* (Bridled Honey-eater).  
 Breast striated. *P. macleayana* (Yellow-streaked Honey-eater).
531. Distinct yellow or white ear-patches or tufts .. .. 532  
 No pronounced coloured ear-tufts .. .. 532
532. Ear-tuft or coverts pure white .. .. 533  
 Ear-tuft or coverts yellow with white spot behind or yellow only .. 536
533. Throat black: large ear-patch (female has greyer crown); wing  
 3.3 to 3.9 inches. (Ear-patch flushed with yellow in young.)  
*P. leucotis* (White-eared Honey-eater).  
 [*P. novae-norciae* (Western White-eared Honey-eater) has hind-neck  
 and back greyish-olive; narrow ear-stripes; secondaries  
 brown: wing 3.5 inches.]  
 Throat not black: tuft only of ear feathers .. .. 534
534. General colour yellow: face and forehead yellow .. .. 535  
 General colour greyish-green: face yellowish-green.  
*P. penicillata* (White-plumed Honey-eater).
535. Black line along ear-tuft: throat yellow; chest striated faintly.  
*P. carteri* (Carter Honey-eater).  
 No black line along ear-tuft: throat not yellow; chest not striated.  
*P. leikavaleensis* (Lesser White-plumed Honey-eater).
536. Mantle olive: crown nearly black or yellow .. .. 537  
 Mantle and crown almost similar tone .. .. 539
537. Crown yellow: face black: sides of throat yellow, centre blackish .. 538  
 Crown nearly black: throat all yellow. (Crown, cheeks, and throat  
 dark in male.) *P. flavigularis* (Yellow-throated Honey-eater).
538. Mantle olive, with helmet of stubbly feathers: wing 4 inches.  
*P. cassidix* (Helmeted Honey-eater).  
 Mantle blackish-olive; no helmet: wing 3.4 inches.  
*P. auricomis* (Yellow-tufted Honey-eater).
539. Mantle dark olive-green: under surface olive or dark grey: ear-  
 patch light yellow .. .. 540  
 Mantle brownish or light greenish or yellowish: ear coverts bright  
 yellow .. .. 542
540. Under surface greyish: behind eye dusky: wing less than 3.5 inches .. 541  
 Under surface olive: behind eye silky leaden: wing 3.6 to 3.9 inches.  
*P. lewini* (Yellow-eared Honey-eater).
541. Wing 3.1 to 3.5 inches: space before and behind eye similar, black.  
*P. analoga* (Yellow-spotted Honey-eater).  
 Wing 2.5 inches: space in front of eye black and behind olive.  
*P. gracilis* (Little Yellow-spotted Honey-eater).
542. Feathers of fore-neck white and hairy or lanceolate: crown dark  
 brown; under parts whitish and striated.  
*P. cockerelli* (Cockerell Honey-eater).  
 Feathers of fore-neck not hairy or lanceolate .. .. 543
543. Crown and edges of wings yellowish-olive: chest boldly or faintly  
 striated .. .. 544  
 Crown and edges of wings not similar: chest sometimes mottled .. 546
544. Throat and chest yellowish: tuft of black above ear coverts .. 545

Throat and chest whitish, with bold striations.

- P. ornata* (Yellow-plumed Honey-eater).
545. Face, forehead and throat similar; wing 2.7 inches (wing 3 inches,  
= *P. germana*). *P. flavescens* (Yellow-tinted Honey-eater).  
Face, forehead, and throat not similar; wing 3.1 inches.
- P. plumula* (Yellow-fronted Honey-eater).
546. Sides of head with yellow and black marks besides ear-tufts .. 547  
Sides of head plain except for ear-tufts ..  
*P. fusca* (Fuscous Honey-eater).
547. Chest not darker than under surface; throat not barred .. 548  
Chest dark; throat cross-banded with yellow.
- P. fasciogularis* (Fasciated Honey-eater).
548. Chest and abdomen similar; bill not more than 1 inch .. 549  
Throat whitish; chest grey; abdomen buff; bill 1 inch.
- P. filigera* (Streak-naped Honey-eater).
549. With ridge of purplish wattle from gape to ear-tuft.  
*P. cratitia* (Wattle-cheeked Honey-eater).
550. No wattle from gape to ear-tuft .. .. . 550  
Black streak through eye only or above it; chest feathers with  
dark centres .. .. . 551  
Two black streaks across side of head, separated by line of yellow.
- P. chrysope* (Yellow-faced Honey-eater).
551. Throat greyish; wing 3.8 inches. *P. sonora* (Singing Honey-eater).  
Throat yellowish; wing 2.8 inches.  
*P. keartlandi* (Keartland Honey-eater).  
Throat yellow; wing 4 inches; bill 1 inch.
- P. versicolor* (Varied Honey-eater).
552. Plumage yellow. *P. flava* (Yellow Honey-eater).  
Plumage brownish-olive. *P. unicolor* (White-gaped Honey-eater).
553. Crown black or brown; naked space above eye; back greenish or  
yellowish; under surface white or smoky. (Bill smaller in  
female.) MELITHREPTUS. 554
554. Characters other than specified .. .. . 564  
Light-coloured band, lunar shape, behind head .. .. 555  
No complete and distinct light band behind head .. .. 562
555. Wedge-shaped black mark on upper throat .. .. . 556  
Throat white or black only between base of bill .. .. 560
556. Under parts mostly dusky (under parts, bill, and lunar mark yellowish  
in youth) .. .. . 557  
Under parts white. (Crown rufous brown in youth) .. .. 558
557. Sides and under tail coverts dark, like breast.  
*M. validirostris* (Strong-billed Honey-eater).  
Sides and under tail coverts lighter than breast.  
*M. gularis* (Black-chinned Honey-eater).
558. Back very yellow, especially rump; eye-space yellowish .. 559  
Back olive-green; eye-space greenish-blue.  
*M. carpentariana* (Eastern Golden-backed Honey-eater).
559. Wing 3.25 inches; crown black.  
*M. latior* (Golden-backed Honey-eater).  
Wing 2.45 inches; crown vinous. *M. vinitinctus* (Gay Honey-eater).

560. Skin round eye scarlet . . . . . 561  
 Skin round eye greenish; length 5.3 inches; wing 3.1 inches.  
*M. chloropsis* (Western White-naped Honey-eater).
561. Length 5 inches; wing 2.7 inches; throat all white.  
*M. albigularis* (White-throated Honey-eater).  
 Length 5.3 inches; wing 2.9 inches; throat black in base of bill.  
*M. lunulatus* (White-naped Honey-eater).
562. Crown brown; light mark behind eye and faintly behind head; eye-space yellowish; under parts creamy . . . . . 563  
 Head quite black; under parts white. (Crown brown, under surface yellowish in youth.)  
*M. melanocephalus* (Black-headed Honey-eater).
563. Cheeks and sides of throat creamy; under surface darkest on breast; bill .52 inch.  
*M. brevirostris* (Brown-headed Honey-eater).  
 Cheeks and sides of throat pure white; under surface darkest on abdomen; bill .4 inch.  
*M. leucogenys* (Western Brown-headed Honey-eater).
564. Plumage almost uniform green or yellowish, with ring of white feathers round eye; length about 4.5 inches.  
 ZOSTEROPS. WHITE-EYES. 565  
 Plumage different; no white ring round eye . . . . . 570
565. Back olive-brown or greyish . . . . . 566  
 Back greenish like rest of upper surface . . . . . 567
566. Crown olive-green; tail olive. *Z. caeruleescens* (White-eye).  
 Crown greenish-yellow; tail brown, margined with yellow.  
*Z. ramsayi* (Yellow-vented White-eye).
567. Under surface greyish . . . . . 568  
 Under surface yellow . . . . . 569
568. Sides of body ashy-grey, like breast.  
*Z. albiventer* (Pale-bellied White-eye).  
 Sides of body rufous; breast ashy-grey.  
*Z. gouldi* (Green-backed White-eye).
569. Colour above grass-green; bill .5 inch. *Z. lutca* (Yellow White-eye).  
 Colour above olive-yellow; bill .6 inch.  
*Z. gulliveri* (Gulliver White-eye).
570. Bill much longer than head, very slender, black, and much curved 571  
 Bill equal to or shorter than head . . . . . 578
571. Length 4.7 inches; abdomen yellow; bill much longer than shank; throat shining blue-black (male) or yellow (female).  
*Cinnyris frenata* (Sun-Bird).
- Abdomen not yellow . . . . . 572
572. Plumage olive-brown, or head red. MYZOMELA (2). 573  
 Plumage black and white, brown and white, or with rufous collar 575
573. Length 5 inches; plumage olive-brown; crown tinged with red.  
*M. obscura* (Dusky Honey-eater).
- Length about 4 inches; head red (male) or plumage brown (female) 574
574. Head and line along back red (male), bill and legs black (female).  
*M. sanguinolenta* (Sanguineous Honey-eater).  
 Head only red (male); bill and legs olive (female).  
*M. erythrocephala* (Red-headed Honey-eater).

575. Length about 4.4 inches : black and white (male) or brown and white (female) MYZOMELA (2). 576  
 Length 5 inches and over ; abdomen mostly fawn ; collar rufous : much white in tail. ACANTHORIYNCHUS. 577
576. Crown and throat all black (male) or freckled brown (female). *M. nigra* (Black Honey-eater).  
 Crown black : throat white : black band on chest. (Female has rufous back.) *M. pectoralis* (Banded Honey-eater).
577. Crown shining black : small brownish patch on whitish throat. (Female similar, but lighter, especially on throat.)  
*A. tenuirostris* (Spinebill).  
 White streak behind eye : crown brownish ; throat all chestnut, followed by white and black crescents on chest (male). All under surface similar, also crown and back similar, but separated by chestnut collar (female).  
*A. superciliosus* (White-browed Spinebill).
578. Length 4.5 to 6.8 inches : inner web of wing feathers tawny or outer web yellow . . . . . 579  
 Inner web of wing feathers not tawny, nor outer web yellow . . . . . 587
579. Inner web of wing feathers tawny. GLYCYPHILA (3). 580  
 Outer web of wing feathers yellow . . . . . 582
580. Crown tawny (crown streaked and throat yellow in youth).  
*G. fulvifrons* (Tawny-crowned Honey-eater).  
 Crown white and blackish . . . . . 581
581. Forehead all white : throat blackish.  
*G. albifrons* (White-fronted Honey-eater).  
 Forehead not all white : throat white.  
*G. fasciata* (White-breasted Honey-eater).
582. Feathers behind eye peculiarly shaped and silky. GLYCYPHILA (3). 583  
 Feathers behind eye normal. ENTOMOPHILA. 585
583. Ear coverts brownish black . . . . . 584  
 Ear coverts with silvery spots.  
*G. albiauricularis* (Broadbent Honey-eater).
584. Under surface dingy ; feathers behind eye yellow.  
*G. ocularis* (Brown Honey-eater).  
 Under surface white, faintly barred ; feathers behind eye white.  
*G. modesta* (Brown-backed Honey-eater).
585. Length 5.5 inches : upper surface black ; under surface white.  
*E. picta* (Painted Honey-eater).  
 Length 4.75 inches or less : upper surface brownish ; under surface not all white . . . . . 586
586. Throat white. *E. albigularis* (White-throated Honey-eater).  
 Throat reddish. *E. rufigularis* (Rufous-breasted Honey-eater.)
587. Abdomen yellow, rufous, dusky, or white, plain or boldly streaked : length not more than 8 inches . . . . . 588  
 Abdomen otherwise . . . . . 611
588. Bill at nostrils broader than high ; strong gape bristles . . . . . 589  
 Bill at nostrils equal in height and breadth ; bristles round gape hair-like. PACHYCEPHALA. THICKHEADS. 598
589. Under surface all yellow or yellow and white . . . . . 590

- Under surface without yellow colour .. .. . 595
590. Under surface all yellow except chin .. .. . 591  
Abdomen yellow; throat white.  
*Eopsaltria georgiana* (White-breasted Shrike-Robin).
591. Over 5 inches in length. (Young is rufous-brown with light centre  
streak to feathers of back and chest.)  
EOPSALTRIA. SHRIKE-ROBINS (2). 592  
Less than 5 inches long. PŒCILODRYAS. ROBINS (3). 593
592. Rump olive-green, like back.  
*E. australis* (Yellow-breasted Shrike-Robin).  
Rump jonquil-yellow.  
*E. magnirostris* (Yellow-rumped Shrike-Robin).
593. White patch in front of eye .. .. . 594  
Rufous patch in front of eye. *P. nana* (Little Robin).
594. Forehead ashy-olive. *P. capito* (Large-headed Robin).  
Forehead black. *P. albifacies* (White-faced Robin).
595. Upper surface chocolate-brown; distinct white eyebrow.  
PŒCILODRYAS. ROBINS (2). 596  
Upper surface black; no white eyebrow.  
EOPSALTRIA. SHRIKE-ROBINS (2). 597
596. Flanks and under tail coverts whitish.  
*P. superciliosa* (White-browed Robin).  
Flanks and under tail coverts tawny.  
*P. cerviniventris* (Buff-sided Robin).
597. Tail tipped with white. *E. gularis* (Grey-breasted Shrike-Robin).  
Basal half of tail white.  
*E. pulverulenta* (White-tailed Shrike-Robin).
598. Length more than 5.5 inches .. .. . 599  
Length 5 inches. *P. simplex* (Brown Thickhead).
599. Length less than 7 inches .. .. . 600  
Length 7 inches or more .. .. . 609
600. Abdomen yellow (male) or throat and chest ashy without streaks  
(female) .. .. . 601  
Abdomen not yellow (male) or throat and chest ashy and streaked  
(female) .. .. . 605
601. Tail black or olive-green above .. .. . 602  
Tail grey or black and grey above .. .. . 603
602. Tail all black; crown black (male) or grey with black shaft lines;  
throat and chest whitish; abdomen yellow (female).  
*P. melanura* (Black-tailed Thickhead).  
Tail all olive-green; crown ashy-brown.  
*P. peninsulae* (Cape York Thickhead).
603. Tail all grey. *P. glaucura* (Grey-tailed Thickhead).  
Tail grey and black .. .. . 604
604. Base of tail grey only, tip black. (Abdomen light fawn, female.)  
*P. occidentalis* (Western Thickhead).  
Base of tail grey washed with olive; two-thirds black. (Abdomen  
whitish, female.) (In youth mostly rich rust-red.)  
*P. gutturalis* (White-throated Thickhead).
605. Throat white .. .. . 606

	Throat rust-red or grey .. .. .	608
606.	Abdomen dark or light cream colour, plain or streaked .. .. .	607
	Abdomen rich orange-brown (male) or light fawn and streaked (female). <i>P. rufiventris</i> (Rufous-breasted Thickhead).	
607.	Collar broad (male) or abdomen streaked black (female). <i>P. falcata</i> (Northern Thickhead).	
	Collar narrow (male) or abdomen streaked brown (female). <i>P. pallida</i> (Pale-breasted Thickhead).	
608.	Lores rusty-brown, like throat (male); grey mark on chest and streaked below (female). <i>P. rufogularis</i> . (Thought to be young <i>P. gutturalis</i> .)	
	Lores black, not like throat (male); under wing coverts sandy (female). <i>P. gilberti</i> (Red-throated Thickhead).	
609.	Collar black and chestnut, throat and abdomen white (male); no collar, under surface streaked (female) .. .. .	610
	No collar: throat whitish; abdomen olive. (Female has browner mantle and dingier throat.) <i>P. olivacea</i> (Olive Thickhead).	
610.	Back of neck chestnut and black. <i>P. lanioides</i> (White-bellied Thickhead).	
	Back of neck chestnut only. <i>P. fretorum</i> (Torres Strait Thickhead).	
611.	Length more than 7.5 inches: bill black, curved, and .75 to 1.2 inches: distinct light eyebrow. POMATORHINUS. BABBLERS OR CHATTERERS.	612
	Characters otherwise .. .. .	615
612.	Breast, like throat, mostly white; back greyish-brown .. .. .	613
	Breast rufous: throat white; back dark brown. <i>P. rubeculus</i> (Red-breasted Babbler).	
613.	Length about 8 inches: no rufous on abdomen .. .. .	614
	Length 10 inches: abdomen partly rufous. <i>P. temporalis</i> (Babbler).	
614.	Crown chestnut: white marks on shoulder. <i>P. ruficeps</i> (Chestnut-crowned Babbler).	
	Crown dark brown: no white on wing. <i>P. superciliosus</i> (White-browed Babbler).	
615.	Length more than 7.2 inches: bill strong and nearly straight: plumage greyish or brownish, with light eyebrow and spot in front of eye. COLLYRIOCINCLA. SHRIKE-THRUSHES.	616
	Characters not as specified .. .. .	623
616.	Length more than 8 inches: under surface whitish or not uniform	617
	Length less than 8 inches: under surface uniform fawn .. .. .	621
617.	Bill blackish .. .. .	618
	Bill all horn colour: wing 4.85 inches. <i>C. pallidirostris</i> (Pale-headed Shrike-Thrush).	
618.	Back umber and different to head .. .. .	619
	Back ashy-brown, like rest of upper surface .. .. .	620
619.	Bill .8 inches: chest darker than throat or abdomen. <i>C. harmonica</i> (Grey Shrike-Thrush).	
	Bill 1.2 inches. (Crown like back, eyebrow rust-coloured, and breast streaked in female and young.) <i>C. rectirostris</i> (Whistling Shrike-Thrush).	
620.	Wing 4.65 inches: under tail coverts white. (Female has lores and round eye rufous.) <i>C. brunnea</i> (Brown Shrike-Thrush).	

- Wing 4.8 inches: under tail coverts fawn like rest of under surface.  
(Female has rufous eyebrow but lores whitish.)  
*C. rufiventris* (Buff-bellied Shrike-Thrush).
621. Breast dark: under tail coverts rich fawn .. .. . 622  
Breast light: under tail coverts whitish.
- Pinarolestes parvulus* (Little Shrike-Thrush).
622. Wing 4 inches: tail 3.5 inches. *C. boweri* (Bower Shrike-Thrush).  
Wing 3.6 inches: tail 3 inches.  
*Pinarolestes rufigaster* (Rusty-breasted Shrike-Thrush).
623. Tail shorter than or nearly as long as wing .. .. . 624  
Tail longer than wing and usually carried erect .. .. . 747
624. Total length more than 6.6 inches .. .. . 625  
Total length less than 6.6 inches .. .. . 639
625. Shafts of tail feathers produced and spiny: throat white (male),  
rufous (female) or mottled (in youth).
- ORTHONYX. LOG-RUNNERS. 626
- Tail feathers normal .. .. . 627
626. Length about 8 inches: wing coverts tipped grey.  
*O. spinicauda* (Spine-tailed Log-runner).  
Length 10 inches: wing coverts blackish.  
*O. spaldingi* (Black-headed Log-runner).
627. Length more than 7.5 inches: back uniform brown or rufous:  
or spotted with black: wing with white spots.
- CINCLOSOMA. GROUND-BIRDS. 628
- Plumage black and white, brown and white, or brown striated with  
black on back .. .. . 633
628. Back uniform colour .. .. . 629  
Back spotted with black: throat blue-black (male) or white (female).  
*C. punctatum* (Spotted Ground-Bird).
629. Throat black .. .. . 630  
Throat buff. *C. cinnamomeum* (Cinnamon Ground-Bird), female.
630. Crown, upper back, and tail different from lower back .. .. . 631  
Back and centre tail feathers entirely one colour.  
*C. cinnamomeum* (Cinnamon Ground-Bird), male.
631. Chest cinnamon or chestnut .. .. . 632  
No chestnut on breast: throat black (male) or grey (female).  
*C. castanonotum* (Chestnut-backed Ground-Bird).
632. Under tail coverts mostly white, with dark centres: chest chestnut:  
wing 4 inches.  
*C. castancothorax* (Chestnut-breasted Ground-Bird).  
Under tail coverts black with white edges: chest cinnamon: wing  
3.8 inches. *C. marginalatum* (Northern Ground-Bird).
633. Total length 9 or 10 inches .. .. . 634  
Total length 6.5 to 8.5 inches .. .. . 635
634. Back almost uniform: breast and flanks with cross marks. (For  
male see No. 439.)  
*Edoliisoma tenuirostre* (Jardine Caterpillar-eater), female.  
Head and back with black centre to each feather: under surface  
uniform. *Plectorhynchus lanceolatus* (Striped Honey-eater).
635. Plumage purely black and white (male) or brown and white (female) 636



- Plumage mottled brown and rufous or black.  
 CINCLORIHAMPHUS. SONG-LARKS. 638
636. Throat white (breast streaked or barred, female).  
 LALAGE. CATERPILLAR-EATERS. 637
- Throat black (male) or mottled brown (female).  
*Eulomophila leucomelas* (Pied Honey-eater).
637. Wing 4 inches: under tail coverts white.  
*L. tricolor* (White-shouldered Caterpillar-eater).  
 Wing 4.8 inches: under tail coverts lawn.  
*L. leucomelana* (Pied Caterpillar-eater).
638. Rump mottled brown, like back: wing 4 inches (male), 3.25 inches  
 (female). *C. cruralis* (Brown Song-Lark).  
 Rump rufous, not like back: wing 3.6 inches.  
*C. rufescens* (Rufous Song-Lark).
639. Plumage blue-black, black and white, leaden and white, or rufous  
 and white: chest white, but sometimes rufous: tail nearly  
 as long as wing: bill broad. FLYCATCHERS. 640
- Plumage not as specified .. .. . 655
640. Plumage blue-black (male) or rufous and white with shining head  
 (female). *Piezorhynchus nitidus* (Shining Flycatcher).  
 Plumage neither all black nor with rufous back .. .. . 641
641. Plumage shining black and white .. .. . 642  
 Plumage leaden and white: throat leaden or rufous .. .. . 647
642. White ring round neck. ARSES. 643  
 No white ring round neck .. .. . 644
643. Lores white. *A. lorealis* (Frill-necked Flycatcher).  
 Lores black. *A. kaupii* (Pied Flycatcher).
644. Throat black or white and black .. .. . 645  
 Throat white (touch of rufous sometimes on chest). SISURA. 646
645. Length 6.5 inches: throat shining black.  
*Myiagra nitida* (Satin Flycatcher).  
 Length 5.75 inches: throat white bounded by black.  
*Piezorhynchus leucotis* (White-eared Flycatcher).
646. Length 7.7 inches: wing 4 inches.  
*S. inquieta* (Restless Flycatcher).  
 Length 6 inches: wing 3.4 inches. *S. nana* (Little Flycatcher).
647. Plumage leaden and white only. MYLAGRA (2), males. 648  
 Plumage mostly leaden and white, but rufous on chest or throat.
648. Lores dark. *M. concinna* (Blue Flycatcher), male.  
 Lores not darker than face. *M. rubecula* (Leaden Flycatcher), male.
649. Centre of throat rufous, like chest. MYLAGRA (several). 650  
 Face and centre of throat black (male) or greyish (female).  
 PIEZORHYNCHUS (2). 654
650. Crown of head shining blue-black .. .. . 651  
 Crown of head not shining blue-black .. .. . 653
651. Whole back shining blue-black.  
*M. latirostris* (Broad-billed Flycatcher), male.  
 Crown only shining blue-black .. .. . 652
652. Wing 2.9 inches: bill very broad.  
*M. latirostris* (Broad-billed Flycatcher), female.

- Wing 3.35 inches. *M. nitida* (Satin Flycatcher), female.  
 653. Lores dark : ear coverts light. *M. concinna* (Blue Flycatcher), female.  
 Lores not darker than crown : ear coverts dark.  
*M. rubecula* (Leadon Flycatcher), female.  
 654. Flanks and under wings rufous, like chest. *P. gouldi* (Spectacled Flycatcher).  
 Flanks and under wings white like abdomen. *P. albiventris* (White-bellied Flycatcher).  
 655. Plumage light grey and rufous or olive and yellow : tail nearly as long as wing .. .. . 656  
 Plumage not light grey and rufous and not olive and yellow .. 658  
 656. Length about 6 inches : abdomen rufous. MONARCHA. 657  
 Length 4.6 inches : abdomen yellow ; bill extremely broad. *Macharorhynchus flaviventer* (Yellow-breasted Flycatcher).  
 657. Tail and wings black. *M. canescens* (Pearly Flycatcher).  
 Tail and wings not darker than upper surface (female has less black on throat and forehead). *M. melanopsis* (Black-faced Flycatcher).  
 658. Bill straight and broadened or cylindrical, usually with strong bristles round gape .. .. . 659  
 Bill curved and black, or straight and light in colour : no bristles round gape ; hind toe very strong, claw very large and much curved ; legs black or horn colour : tail short .. .. . 734  
 659. Bill at nostrils much broader than high : plumage sombre ; wing feathers uniform, but outer tail feathers mostly white. MICRÆCA. 660  
 Bill at nostrils about equal in height and breadth .. .. . 663  
 660. Abdomen whitish .. .. . 661  
 Abdomen yellow. *M. flavigaster* (Lemon-breasted Flycatcher).  
 661. Outer tail feathers white .. .. . 662  
 Outer tail feathers blackish, with white tips. *M. assimilis* (Lesser Brown Flycatcher).  
 662. Wing 3.5 inches. *M. fascians* (Brown Flycatcher).  
 Wing 3.03 inches : plumage very light. *M. pallida* (Pale Flycatcher).  
 663. Length over 4.5 inches ; upper and under surfaces almost similar uniform brownish, or under surface with red or pink colour ; wing feathers with light spots or bands across. ROBINS. 664  
 Characters not these : gape bristles not large .. .. . 678  
 664. Length 6.3 inches ; rusty-brown above ; chest ashy ; abdomen white. *Heteromyias cinereifrons* (Ashy-fronted Fly-Robin). PETRÆCA. 665  
 Plumage otherwise. .. .. . 666  
 665. Plumage black and white (male) or brown and white (female) .. 667  
 Plumage black and scarlet or pink ; or mostly brown .. .. .  
 666. Wing 3.7 inches : tail with broad subterminal band of black. *P. bicolor* (Hooded Robin).  
 Wing 3.5 inches : tail with narrow subterminal band of black. *P. picata* (Pied Robin).  
 667. Plumage all brown .. .. . 668

- Breast scarlet or pink .. .. . 672
668. Length 5.8 inches. (Crown and back streaked in youth.)  
*P. vittata* (Dusky Robin).
- Length 5 inches or less .. .. . 669
669. Outer tail feathers mostly white and also wing marks .. .. . 670
- Outer tail feathers not white; wing marks tinged rufous.  
*P. rhodinogastra* (Pink-breasted Robin), female.
670. Forehead tinged rusty-red (under surface darker or tinged red in  
 young male). *P. goodenovi* (Red-capped Robin), female.
- Forehead with small spot (breast sometimes flushed with red or pink) 671
671. Upper surface brown; wing 3 inches. (Breast flushed with red  
 in young male.) *P. phoenicea* (Flame-breasted Robin), female.
- Upper surface dark grey; wing 2.5 inches. (Breast flushed with  
 pink in young male and often female.)  
*P. rosea* (Rose-breasted Robin), female.
672. Forehead red .. .. . 673
- Forehead not red .. .. . 674
673. Throat all black. *P. goodenovi* (Red-capped Robin), male.
- Throat black with red in centre from breast. (Probably a varia-  
 tion of previous species.) *P. ramsayi* (Red-throated Robin).
674. Breast scarlet: large patch of white on forehead .. .. . 675
- Breast pink: very small spot of white on forehead .. .. . 677
675. Abdomen white; throat and back black (male) or brownish (female) 676
- Abdomen and throat scarlet, like breast.  
*P. phoenicea* (Flame-breasted Robin), male.
676. Forehead spot .5 inch across; wing 2.85 inches.  
*P. leggii* (Scarlet-breasted Robin).
- Forehead spot .35 inch across; wing 3 inches.  
*P. campbelli* (Western Scarlet-breasted Robin).
677. Tail all black. *P. rhodinogastra* (Pink-breasted Robin), male.
- Outer tail feathers and abdomen white.  
*P. rosea* (Rose-breasted Robin), male.
678. Whole plumage boldly streaked .. .. . 679
- Plumage not streaked (except crown and throat) .. .. . 685
679. Length about 4 inches; colour sandy-buff, with broad black stripes  
 on upper surface; head plain when mature; tail rounded.  
*Cisticola exilis* (Grass-Warbler).
- Characters not as specified .. .. . 680
680. Crown streaked black; under surface olive-yellow or white; under  
 tail coverts streaked. CALAMANTHUS. FIELD-WRENS. 681
- Crown streaked white; under surface whitish; under tail coverts  
 not streaked. *Chthonicola sagittata* (Little Field-Wren).
681. Upper surface olive-green or dull brown; throat white (male) or  
 buff (female) .. .. . 682
- Upper surface sandy rufous, with faint streaks; under surface white,  
 streaked black .. .. . 685
682. Crown olive-green, streaked like back .. .. . 683
- Crown rufous and nearly uniform. *C. campestris* (Field-Wren).
683. Upper surface olive-green with broad stripes; abdomen olive-yellow;  
 length 5 inches; bill .4 inch; tarsus .8 inch. (Tasmanian  
 specimens are larger.) *C. fuliginosus* (Striated Field-Wren).

- Upper surface dingy-brown, with narrow stripes : under surface  
ashy-white : length 5.25 inches : bill .5 inch : tarsus .9 inch.  
*C. montanellus* (Rock Field-Wren).
684. Dark streaks of back almost lost. *C. isabellinus* (Desert-Wren).  
Dark streaks of back distinct : wing 1.95 inches. (Possibly a desert  
variety.) *C. rubiginosus* (Rusty Field-Wren).
685. Length over 5 inches : upper and under surfaces almost similar .. 686  
Length 5 inches and under .. .. . 688
686. Length about 6.5 inches : colour russet-brown, darkest on head,  
lightest on rump : first primary of wing extremely small.  
ACROCEPHALUS. REED-WARBLED. 687  
Length about 5.5 inches : dark sooty-brown above, deep ferru-  
ginous below. *Origma rubricata* (Rock-Warbler).
687. Bill .6 to .75 inch : shank 1 inch. *A. australis* (Reed-Warbler).  
Bill .8 to .85 inch : shank 1.1 inches.  
*A. longirostris* (Long-billed Reed-Warbler).
688. Plumage never streaked, but often with distinct colours or broad  
marks on under surface (gape bristles absent in *Ephthianura*) .. 689  
Plumage various (gape bristles absent in *Smicrornis*) .. .. 696
689. Length about 4 inches : upper surface brownish : lores white : bill  
stout and .4 inch long : tail square.  
NEROPHILA. WHITE-FACES. 690  
Length more than 4 inches : bill .5 inch and slender.  
EPHTHIANURA. CHATS. 693
690. Under surface with black or cinnamon band .. .. 691  
Under surface plain and like back. *X. leucopsis* (Whiteface).
691. Flanks chestnut. *X. castaneiventris* (Chestnut-bellied Whiteface).  
Flanks not chestnut entirely .. .. . 692
692. Cinnamon band on chest.  
*X. pectoralis* (Chestnut-breasted Whiteface).  
Narrow black band on chest.  
*X. nigricincta* (Black-banded Whiteface).
693. Throat white or greyish .. .. . 694  
Throat black or yellow .. .. . 695
694. Abdomen white, with black band across chest (male) : abdomen  
greyer, with obscure band (female).  
*E. albifrons* (White-fronted Chat).  
Abdomen, crown, and rump scarlet (male) : abdomen brownish, rump  
scarlet (female). *E. tricolor* (Tricolored Chat).
695. Throat black : breast yellow. (Head brown, female.)  
*E. aurifrons* (Orange-fronted Chat).  
Throat and breast yellow, with band of black across chest (lighter in  
female). *E. crocea* (Yellow-breasted Chat).
696. Length not more than 4 inches : never streaked .. .. 697  
Length not less than 4 inches : throat or crown often streaked .. 708
697. Bill .4 inch and over, black. FLY-EATERS. 698  
Bill only .3 inch, brown in colour SMICRORNIS. TREE-TITS. 707
698. Throat black or brown.  
*Pseudogerygone personata* (Black-throated Fly-eater), male.  
Throat not black or brown .. .. . 699

699.	Breast yellow .. .. .	700
	Breast brown or whitish. PSEUDOGERYGONE.	702
700.	Tail with black subterminal bar, tip white. GERYGONE.	701
	Tail uniform brown: throat white.	
	<i>Pseudogerygone personata</i> (Black-throated Fly-eater), female.	
701.	Upper surface olive. <i>G. albigularis</i> (White-throated Fly-eater).	
	Upper surface ashy. <i>G. cinerascens</i> (Grey Fly-eater).	
702.	Back black, brown, or grey: tail with bar of black .. .. .	703
	Back green: no subterminal black band on tail.	
	<i>P. chloronota</i> (Green-backed Fly-eater).	
703.	Back and sides of body reddish-brown .. .. .	704
	Back and sides of body greyish .. .. .	706
704.	Tip of tail all white: no light eyebrow .. .. .	705
	Inner webs of tail feathers with spot of white near tip; light-coloured eyebrow. <i>P. fusca</i> (Brown Fly-eater).	
705.	Ring of white round eye: bill entirely black.	
	<i>P. brunneipectus</i> (Black-billed Fly-eater).	
	No ring round eye: bill white at base of lower mandible.	
	<i>P. magnirostris</i> (Large-billed Fly-eater).	
706.	Throat white: ear coverts brown: tip of tail all white.	
	<i>P. laevigata</i> (Buff-breasted Fly-eater).	
	[ <i>P. tenebrosa</i> (Dusky Fly-eater) has tail all uniform ashy-brown: lores and eyebrows creamy-white: throat and under surface whitish, but flanks darker: length 4.75 inches: bill .4 inch: wing 2.1 inches: tarsus .7 inch.]	
	Throat and ear coverts grey: tail white at base and also inner webs with spot of white near tip. <i>P. culicivora</i> (Southern Fly-eater).	
707.	Plumage olive: lores and eyebrows reddish-brown.	
	<i>S. brevirostris</i> (Short-billed Tree-Tit).	
	Plumage yellow: lores and eyebrows whitish.	
	<i>S. flavescens</i> (Yellow Tree-Tit).	
708.	Upper surface rich brown or grey: bill more than .4 inch: forehead plain.	700
	Upper surface olive: bill usually less than .4 inch: forehead not plain.	
	SERICORNIS. SCRUB-WRENS. 719	
	ACANTHIZA. TITS. 710	
709.	No white on wing feathers: colour rich brown or grey .. .. .	712
	Shoulder feathers edged white: lores black (male) or slaty (female)	711
710.	General colour brown: lores black, slaty, or tawny .. .. .	711
	General colour grey: lores white (male has rufous throat).	
	<i>S. brunca</i> (Red-throat).	
711.	Throat yellow: lores black (male) or slaty (female): wing 2.7 inches.	
	<i>S. citreogularis</i> (Yellow-throated Scrub-Wren).	
	Throat brownish: lores tawny: wing 2.2 inches.	
	<i>S. magnirostris</i> (Large-billed Scrub-Wren).	
712.	White tips to outer tail feathers, and dark subterminal band ..	713
	No white tips to outer tail feathers: tail band obscure or absent ..	715
713.	Secondary wing feathers much edged and tipped with white.	
	<i>Acanthornis magna</i> (Scrub-Tit).	
	Secondary wing feathers not edged and tipped with white ..	714
714.	Forehead black: throat white, barely spotted.	
	<i>S. laevigata</i> (Buff-breasted Scrub-Wren).	

- Forehead brown, like crown; throat thickly spotted.  
*S. maculata* (Spotted Scrub-Wren).
715. No dark subterminal band on tail .. .. . 716  
 Obscure subterminal band on outer tail feathers; head and back  
 olive, not like rump .. .. . 718
716. Broad black crescent on lower throat; wing 2.4 inches.  
*S. gularalis* (Collared Scrub-Wren).
- No black crescent on lower throat; head and back rich brown, like  
 rump .. .. . 717
717. Length 4.5 inches; wing 2.35 inches.  
*S. frontalis* (White-browed Scrub-Wren).
- Length less than 4.5 inches; wing more than 2.4 inches.  
*S. minimus* (Little Scrub-Wren).
718. Upper throat white; abdomen whitish; flanks brown; legs light  
 brown. *S. osculans* (Allied Scrub-Wren).
- Upper throat speckled like lower; abdomen and flanks olive;  
 legs dark brown. *S. humilis* (Brown Scrub-Wren).
719. Dark band over nearly half of tail .. .. . 720  
 Dark band narrow and subterminal .. .. . 726
720. Rump bright yellow .. .. . 721  
 Rump rufous or light fawn .. .. . 722
721. Length 3.8 inches; wing 2.25 inches; forehead black, with white  
 spots; abdomen brownish-white.  
*A. chrysorrhoa* (Yellow-rumped Tit or Tom-Tit).
- Length 3.6 inches; wing 2.3 inches; forehead not black and spots  
 few; abdomen white. *A. pallida* (Western Tom-Tit).
722. Base of tail rufous, like tail coverts .. .. . 723  
 Base of tail fawn; tail coverts dull yellow. .. .. . 724
723. Forehead with white half-circles.  
*A. uropygialis* (Chestnut-rumped Tit).
- Crown and forehead striated with black.  
*A. robustirostris* (Thick-billed Tit).
724. Length 4 inches; wing 2 inches; bill .4 inch; upper tail coverts  
 ochreous .. .. . 725  
 Length 3.5 inches; wing 1.9 inches; bill .3 inch; upper tail coverts  
 yellowish white. *A. tenuirostris* (Western Buff-rumped Tit).
725. Length 4 inches; tarsus .7 inch; feathers of throat uniform.  
*A. reguloides* (Buff-rumped Tit).
- Length 4.7 inches; tarsus .5 inch; feathers of throat with dark  
 edges. *A. squamata* (Scaly-breasted Tit).
726. Throat ashy or yellowish-white, often flecked with black .. 727  
 Throat pale rufous, with fine white shaft streaks.  
*A. nana* (Little Tit.)
727. Crown like back except for scale-like marks on forehead .. .. 728  
 Crown rufous with white shaft streaks. *A. lineata* (Striated Tit).
728. Tail feathers with distinct white tips .. .. . 729  
 Tail feathers not tipped white .. .. . 730
729. Forehead feathers black with whitish margins.  
*A. apicalis* (Broad-tailed Tit).
- Forehead feathers rufous with dusky margins.  
*A. pyrrhopygia* (Red-rumped Tit).

730. Throat and breast streaked : upper tail coverts reddish-brown .. 731  
 No streaks on throat and breast : no bright rump.  
*A. inornata* (Plain-coloured Tit).
731. Forehead with light and dark margins to feathers .. .. 732  
 Forehead uniform light rufous : bill .3 inches : tarsus 1.8 inches.  
*A. ewingi* (Ewing Tit).
732. Bill .35 to .4 inch .. .. . 733  
 Bill .5 inch : tarsus .75 inch. *A. magnirostris* (Large-billed Tit).
733. Abdomen pale yellow : flanks fulvous brown.  
*A. pusilla* (Brown Tit).  
 Abdomen yellowish-white : flanks olive-brown.  
*A. diemenensis* (Brown-rumped Tit).
734. Length more than 6 inches : bill more than .5 inch, black and curved.  
 CLIMACTERIS. TREE-CREEPERS. 735  
 Length less than 5 inches : bill light in colour (at base), straight or  
 upturned, nostrils covered by valve.  
 SITTELLA. TREE-RUNNERS. 741
735. Upper surface uniform brownish-black .. .. 736  
 Upper surface slaty, brown, or reddish-brown .. .. 737
736. Throat black with white stripes.  
*C. melanura* (Black-tailed Tree-creeper).  
 Throat whitish and not striped.  
*C. melanonota* (Black-backed Tree-creeper).
737. Centre pair of tail feathers dark grey, like most of upper surface .. 738  
 Centre pair of tail feathers olive-brown (general colour olive to  
 reddish-brown) .. .. . 740
738. Rump dark grey .. .. . 739  
 Rump rusty-red. *C. pyrrhonota* (Red-backed Tree-creeper).  
 (Probably young of *C. leucophaea*).
739. Whole fore-neck and throat white.  
*C. leucophaea* (White-throated Tree-creeper).  
 Throat slaty : buff crescent across chest : eyebrow reddish-brown.  
*C. erythrops* (Red-browed Tree-creeper).  
 Throat slaty : eyebrow white.  
*C. superciliosa* (White-browed Tree-creeper).
740. Abdomen buff and much striated.  
*C. scandens* (Brown Tree-creeper).  
 Abdomen rusty-red and not striped. *C. rufa* (Rufous Tree-creeper).
741. Large patch on wing pure white .. .. 742  
 Large patch on wing rusty-red or rusty and white .. .. 744
742. Head black on top .. .. . 743  
 Head white all round. *S. albata* (Pied Tree-runner).
743. Breast and abdomen streaked (male has throat black).  
*S. striata* (Striated Tree-runner).  
 Breast and abdomen not streaked.  
*S. leucoptera* (White-winged Tree-runner).
744. Breast and abdomen streaked .. .. . 745  
 Breast and abdomen not streaked .. .. . 746
745. Crown dark brown : cheeks grey (male) or black (female).  
*S. chrysoptera* (Orange-winged Tree-runner).

Head and neck all white (male) or grey (female).

- S. leucocephala* (White-headed Tree-runner).
746. Crown black; cheeks grey (male) or black (female).  
     *S. pileata* (Black-capped Tree-runner).  
 Crown brownish; wing-patch half rusty, half white.  
     *S. tenuirostris* (Slender-billed Tree-runner).
747. Tail of peculiar feathers without barblets.  
     STIPITURUS. EMU-WRENS. 748  
 Tail of ordinary feathers . . . . . 749  
 748. Tail black; crown striped with black. *S. malachurus* (Emu-Wren).  
 Tail and crown rufous (males of both species have throat blue).  
     *S. ruficeps* (Rufous-crowned Emu-Wren).
749. Upper surface with white stripe down centre of each feather; under  
 surface mostly similar but paler; 5 bristles on each side of  
 gape; 10 tail feathers. AMYTIS. GRASS-WRENS. 750  
 Upper and under surfaces not both streaked, if at all . . . . . 754
750. Length 8 inches; wing 3 inches. *A. housei* (Black Grass-Wren).  
 Length less than 7 inches; wing about 2.5 inches . . . . . 751
751. Chest and throat streaked . . . . . 752  
 Chest and throat white. *A. goyderi* (Goyder Grass-Wren).
752. No black mark on cheek . . . . . 753  
 Broad black mark on cheek. *A. striata* (Striated Grass-Wren).
753. Wing 2.3 inches; flanks and under shoulder rust-red.  
     *A. textilis* (Grass-Wren).  
 [*A. modesta* (Modest Grass-Wren) has bill deeper and upper parts  
 paler; under surface pale brownish, slightly darker on sides  
 of neck and chest; throat whitish; line from nostrils to above  
 eye pale rust-red; length 6.5 inches; bill .42 inch; wing  
 2.55 inches; tail 3.2 inches; tarsus .95 inch.]  
 Wing 2.5 inches; rust-red only under wing.  
     *A. macrura* (Large-tailed Grass-Wren).
754. Total length from 6.8 to 10 inches . . . . . 755  
 Total length less than 6.5 inches . . . . . 761
755. Wing feathers uniform; tail not tipped with white; three stout  
 bristles on each side of gape. SPHENURA. BRISTLE-BIRDS. 756  
 Wing feathers with white bar; outer tail feathers tipped white; gape  
 bristles not stout. DRYMADUS. SCRUB-ROBINS. 759
756. Length more than 9 inches; crown rufous . . . . . 757  
 Length 7 or 8 inches; crown not rufous . . . . . 758
757. Length 10 inches; wing 3.7 inches.  
     *S. broadbenti* (Rufous Bristle-Bird).  
 Length 9 inches; wing 3.4 inches.  
     *S. littoralis* (Lesser Rufous Bristle-Bird).
758. Length about 8 inches; upper surface uniform.  
     *S. brachyptera* (Bristle-Bird).  
 Length 6.8 inches; upper surface mottled.  
     *S. longirostris* (Long-billed Bristle-Bird).
750. Black spot above eye and black streak below.  
     *D. superciliaris* (Eastern Scrub-Robin).  
 Black spot above eye only. . . . . 760



760. Under surface brownish, except centre of abdomen.  
*D. brunneopygius* (Scrub-Robin).  
 Under surface buffy-white, sides of breast and flanks browner.  
*D. pallidus* (Pale Scrub-Robin).
761. General colour sandy-brown or chocolate-brown, with very long  
 upper tail coverts .. .. . 762  
 Plumage otherwise .. .. . 763
762. Length 5.5 inches : wing 2.1 inches : throat and lores whitish.  
*Eremiornis carteri* (Carter Desert-Bird).  
 Length 6 inches : wing 2.8 inches : throat and lores rufous.  
*Pycnoptilus floccosus* (Pilot-Bird).
763. Feathers of back olive with black centres.  
 MEGALURUS. GRASS-BIRDS. 764  
 Feathers of back uniform or brightly coloured .. .. . 766  
 764. Length 5.5 inches : wing 2.4 inches : crown spotted with black .. 765  
 Length 6.5 inches : wing 2.6 inches : crown tawny.  
*M. galactoles* (Tawny Grass-Bird).
765. Sides of body and under tail coverts striated brownish-black.  
*M. striatus* (Striated Grass-Bird).  
 Under surface uniform greyish (except throat, which is faintly  
 striated in female, bolder in male). *M. gramineus* (Grass-Bird).
766. Rump chestnut : throat and breast boldly streaked.  
 HYLACOLA. GROUND-WRENS. 767  
 Rump not chestnut : throat and breast not streaked .. .. . 768
767. Eyebrows and tips of tail feathers pure white : white spot on wing.  
*H. caula* (Red-rumped Ground-Wren).  
 Eyebrows and tips of tail feathers greyish : no white on wing.  
*H. pyrrhopygia* (Chestnut-rumped Ground-Wren).
768. Bill at nostrils much broader than high : bristles round gape nearly  
 as long as bill. RHIPIDURA. FLYCATCHERS. 769  
 Bill at nostrils about as high as broad : gape bristles very small.  
 MALURUS. WRENS. 778
769. General colour brownish or blackish : throat white .. .. . 770  
 Upper surface and throat black, under surface and eyebrow white.  
*R. tricolor* (Black-and-White Fantail).
770. Eyebrow and base of tail rufous .. .. . 771  
 Eyebrow and base of tail greyish-black .. .. . 772
771. Breast spotted : wing 3 inches. *R. rufifrons* (Rufous Fantail).  
 [*R. intermedia* (Northern Rufous Fantail) has tail feathers distinctly  
 tipped white and less rufous at base : chest with fewer scaly  
 marks, and with black band narrow : centre of breast and  
 abdomen white : length 5.6 inches : bill .32 inch : wing 2.9  
 inches : tail 3.3 inches : tarsus .7 inch.]  
 Breast not spotted : wing 2.6 inches. *R. dryas* (Wood Fantail).
772. Total length 6 inches ; wing 2.75 inches .. .. . 773  
 Total length 6.5 inches ; wing 3 inches.  
*R. setosa* (Northern Fantail).
773. Wings spotted and some feathers edged with white .. .. . 774  
 Wings almost entirely blackish. *R. diemenensis* (Dusky Fantail).
774. Chest with prominent black or grey patch .. .. . 775

- Chest tawny .. .. . 777
775. Wing coverts spotted: secondaries edged with white.  
*R. preissi* (Western Fantail).
- Wing coverts spotted or edged: secondaries not plainly edged,  
 if at all .. .. . 776
776. Outer tail feather pure white. *R. albicauda* (White-tailed Fantail).  
 Outer tail feather not all white.  
*R. albiscapa* (White-shafted Fantail).
777. Upper surface light brownish-grey. *R. phasianiana* (Pheasant Fantail).  
 Upper surface dark blackish-grey. *R. preissi* (Western Fantail).
778. Mantle containing blue or red or lilac .. .. . 779  
 Plumage mostly brown .. .. . 798
779. Upper surface dull blue: ear coverts bright blue: lores and throat  
 white: tail broadly tipped with white.  
*M. amabilis* (Lovely Wren), female.
- Plumage not as specified. MALE WRENS. 780
780. Plumage black and white.  
*M. edouardi (leucopterus)* (Black-and-White Wren).
- Plumage not black and white .. .. . 781
781. Plumage blue and white only .. .. . 782  
 Plumage not blue and white only .. .. . 783
782. Centre of back blue: wing coverts white.  
*M. leucopterus (cyanotus)* (White-winged Wren).  
 Centre of back white, like wing coverts.  
*M. leuconotus* (White-backed Wren).
783. Plumage red and black .. .. . 784  
 Plumage not red and black .. .. . 785
784. Length 4.4 inches: back scarlet-vermilion.  
*M. melanocephalus* (Orange-backed Wren).  
 Length 4 inches: back deep crimson.  
*M. dorsalis* (Red-backed Wren).
785. Crown bluish or greenish .. .. . 786  
 Crown lilac, with black spot in centre.  
*M. coronatus* (Purple-crowned Wren).
786. Wing coverts chestnut .. .. . 787  
 Wing coverts not chestnut .. .. . 791
787. Colour of back blue and darker or similar to ear coverts .. .. . 788  
 Colour of back greenish and lighter than ear-coverts.  
*M. elegans* (Red-winged Wren).
788. Throat jet black .. .. . 789  
 Throat deep indigo blue: bill .45 inch.  
*M. pulcherrimus* (Blue-breasted Wren).
789. Forehead and back of similar blue .. .. . 790  
 Forehead and crown greenish-blue: back blue: legs light brown.  
*M. lamberti* (Variegated Wren).
790. Forehead and ear coverts of similar blue: outer web of outer tail  
 feather and tips white: legs light brown.  
*M. amabilis* (Lovely Wren).  
 Forehead blue: ear coverts greenish-blue: tail tipped only with  
 white: legs dark brown. *M. assimilis* (Purple-backed Wren).

791.	Throat blue .. .. .	792
	Throat black .. .. .	795
792.	Rump black .. .. .	793
	Rump all blue, like back. <i>M. splendens</i> (Banded Wren).	
793.	Throat much darker blue than crown and mantle .. ..	794
	Throat, crown, and back of similar blue.	
	<i>M. melanotus</i> (Black-backed Wren).	
794.	Blue band on chest below black almost similar in colour to back.	
	<i>M. whitci</i> (Darker Turquoise Wren).	
	Blue band on chest, but ear coverts, crown, and back very light silvery green. <i>M. callainus</i> (Turquoise Wren).	
795.	Length 5.2 inches and less : faint blue or no blue on wings ..	796
	Length 5.5 inches : wing coverts deep blue and primaries edged blue.	
	<i>M. elizabethae</i> (Dark Blue Wren).	
796.	Colour of mantle cobalt blue : faint blue on wing coverts ..	797
	Colour of mantle light blue : no blue on wing coverts.	
	<i>M. cyanochlamys</i> (Silvery-blue Wren).	
797.	Wing 2 inches : tail 2.2 inches : abdomen white.	
	<i>M. cyaneus</i> (Blue Wren).	
	Wing 2.1 inches : tail 2.5 inches : abdomen dusky.	
	<i>M. gouldi</i> (Long-tailed Blue Wren).	
798.	Bill black is winter plumage, and some bluish feathers on head or reddish on back, immature plumage of MALES of several species. No coloured feathers in mantle : bill and lores reddish-brown.	
	FEMALE WRENS.	799
799.	Length about 4.5 inches : tail all rufous-brown, like wings and back	800
	Length about 5 inches : tail blue or bluish-brown : back and wings dissimilar in colour .. .. .	801
800.	Wing 1.7 inches : lores whitish.	
	<i>M. melanocephalus</i> (Orange-backed Wren) or	
	<i>M. dorsalis</i> (Red-backed Wren).	
	Wing 1.85 inches : lores and feathers round eye rufous.	
	<i>M. leucopterus</i> (White-winged Wren) or	
	<i>M. leuconotus</i> (White-backed Wren).	
801.	Tail brownish above, bluish below .. .. .	802
	Tail all blue .. .. .	804
802.	Wing 2 inches, and dark brown edged faint bluish-yellow ..	803
	Wing 1.9 inches, and light brown edged yellowish ..	
	<i>M. cyanochlamys</i> (Silvery Blue Wren).	
803.	Tail 2.5 inches : tarsus .78 inch. <i>M. cyaneus</i> (Blue Wren).	
	Tail 2.7 inches : tarsus .85 inch : darker plumage.	
	<i>M. gouldi</i> (Long-tailed Blue Wren).	
804.	Lores and circle round eye rufous .. .. .	805
	Lores white ; mark behind eye chestnut.	
	<i>M. coronatus</i> (Purple-crowned Wren).	
805.	Lores deep chestnut or darker than bill .. .. .	806
	Lores rusty or lighter than bill .. .. .	807
806.	Bill .3 inch ; tail 2.8 inches. <i>M. assimilis</i> (Purple-backed Wren).	
	Tail .32 inch ; bill 2.5 inches. <i>M. lamberti</i> (Variegated Wren).	
807.	Wing 1.9 inches ; tarsus .8 inch .. .. .	808



# INDEX TO DICHOTOMOUS KEY.

Acanthiza	-	-	-	708	Buzzard	-	-	-	219
Acanthochara	-	-	-	379	Cacatua	-	-	264,	266
Acanthorhynchus	-	-	-	575	Cacomantis	-	-	-	248
Acanthornis	-	-	-	713	Calamanthus	-	-	-	680
Accipiter	-	-	-	240	Calidris	-	-	-	123
Acrocephalus	-	-	-	686	Callocalia	-	-	-	370
Egialitis	-	-	-	122	Callocephalon	-	-	-	265
Egitha	-	-	-	493	Calopsittacus	-	-	-	205
Egotheles	-	-	-	305	Calornis	-	-	-	454
Aeluroedus	-	-	-	425	Calyptorhynchus	-	-	-	258
Aidemosyne	-	-	-	497	Caprimulgus	-	-	-	393
Albatrosses	-	-	-	42	Carphibis	-	-	-	182
Aleyone	-	-	-	329	Casarca	-	-	-	83
Amaurornis	-	-	-	105	Cassowary	-	-	-	4
Amytis	-	-	-	749	Casuarus	-	-	-	4
Anas	-	-	-	90	Catarrhactes	-	-	-	3
Ancylochilus	-	-	-	143	Cat-Birds	-	-	-	425
Anous	-	-	-	68	Caterpillar eaters	-	439,	634,	636
Anseranas	-	-	-	77	Cathartus	-	-	-	373
Anthus	-	-	-	471	Centropus	-	-	-	244
Antigone	-	-	-	184	Cerchneis	-	-	-	234
Apro-mictus	-	-	-	284	Cereopsis	-	-	-	77
Ardea	-	-	-	189	Chetura	-	-	-	371
Ardetta	-	-	-	195	Chaleococeyx	-	-	-	252
Arenaria	-	-	-	148	Chalophaps	-	-	-	342
Arses	-	-	-	642	Channelbill	-	-	-	247
Artamus	-	-	-	461	Charadrius	-	-	-	120
Astur	-	-	-	226	Chats	-	-	-	689
Atrichia	-	-	-	503	Chatterers	-	-	-	611
Avocet	-	-	-	140	Chenonetta	-	-	-	81
Babblers	-	-	-	611	Chenopsis	-	-	-	77
Bald-Coots	-	-	-	166	Cheramoeca	-	-	-	457
Barnardius	-	-	-	286	Chibia	-	-	-	423
Bartramia	-	-	-	155	Chlamydera	-	-	-	442
Bathilda	-	-	-	496	Chough	-	-	-	396
Baza	-	-	-	226	Chthonicola	-	-	-	680
Bee-eater	-	-	-	323	Cincloramphus	-	-	-	935
Bell-Bird	-	-	-	513	Cinclosoma	-	-	-	627
Bell-Miner	-	-	-	519	Cinnyris	-	-	-	571
Birds of Paradise	-	-	-	417	Circus	-	-	-	220
Birds of Prey	-	-	-	200	Cisticola	-	-	-	679
Bittern	-	-	-	183	Cladorhynchus	-	-	-	119
Biziura	-	-	-	80	Clumacteris	-	-	-	734
Blue Wrens	-	-	791,	801	Coachwhip-Birds	-	-	-	514
Botaurus	-	-	-	199	Cockatoos	-	-	-	256
Bower-Birds	-	427	442,	509	Collyriocincla	-	-	-	615
Bristle-Birds	-	-	-	755	Columba	-	-	-	353
Brown Hawk	-	-	-	236	Coot	-	-	-	8
Burhinus	-	-	-	116	Corcorax	-	-	-	396
Bush-Larks	-	-	-	471	Cormorants	-	-	-	93
Bustard	-	-	-	113	Corone	-	-	-	394
Bustard-Quails	-	-	-	106	Corvus	-	-	-	394
Butcher-Birds	-	-	-	409	Coturnix	-	-	-	134
Butoroides	-	-	-	197	Coucal	-	-	-	244

Cracticus	-	-	-	409	Frogmouths	-	-	-	362	
Crakes	-	-	-	170	Fulica	-	-	-	8	
Cranes (see also Herons)	-	-	-	183	Gabianus	-	-	-	70	
Crows	-	-	-	394	Gallinago	-	-	-	158	
Crow-Shrikes	-	-	-	397	Gallinula	-	-	-	169	
Craspedophora	-	-	-	410	Gannets	-	-	-	99	
Cuckoos	-	-	-	243	Garrodia	-	-	-	17	
Cuckoo-Shrikes	-	-	-	433	Garzetta	-	-	-	186	
Cuculus	-	-	-	248	Geese	-	-	-	50	
Curlew, Land	-	-	-	116	Gelochelidon	-	-	-	54	
Curlew, Sea	-	-	-	145	Geocichla	-	-	-	441	
Cyclopsittacus	-	-	-	272	Geopelia	-	-	-	355	
Cymodroma	-	-	-	14	Geophaps	-	-	-	346	
Dacelo	-	-	-	324	Geopsittacus	-	-	-	307	
Daption	-	-	-	24	Gerygone	-	-	-	700	
Darter	-	-	-	93	Glareola	-	-	-	162	
Demicregretta	-	-	-	191	Glossopsittacus	-	-	-	273	
Dendrocygna	-	-	-	84	Glottis	-	-	-	139	
Desert-Bird	-	-	-	762	Glycyphila	-	-	579,	582	
Desert-Wren	-	-	-	684	Godwits	-	-	-	140	
Diamond Birds	-	-	-	474	Goshawks	-	-	222,	226	
Dicaeum	-	-	-	455	Grallina	-	-	-	422	
Diomedea	-	-	-	44	Graucalus	-	-	-	434	
Dollar-Bird	-	-	-	360	Grass-Birds	-	-	-	763	
Dottrels	-	-	120,	150	Grass-Warbler	-	-	-	679	
Dove-Petrels	-	-	-	19	Grass-Wrens	-	-	-	749	
Doves	-	-	-	322	Grebes	-	-	-	8	
Dromaeus	-	-	-	5	Greenshanks	-	-	139,	155	
Drongo	-	-	-	423	Ground-Birds	-	-	-	627	
Drymaeodes	-	-	-	755	Ground-Lark	-	-	-	471	
Ducks	-	-	-	50	Ground-Thrushes	-	-	-	441	
Dupetor	-	-	-	199	Ground-Wrens	-	-	-	766	
Eagle-Hawk	-	-	-	217	Gulls	-	-	-	52	
Eagles	-	-	-	201	Gygis	-	-	-	65	
Edolisoma	-	-	439,	634	Gymnorhina	-	-	-	397	
Egrets	-	-	-	183	Gypsoictinia	-	-	-	219	
Elanus	-	-	-	230	Hematopus	-	-	-	114	
Emblema	-	-	-	495	Halcyon	-	-	-	329	
Emus	-	-	-	4	Haliastur	-	-	217,	223,	232
Emu-Wrens	-	-	-	747	Halobucca	-	-	-	19	
Entomophila	-	-	582,	636	Harriers	-	-	-	220	
Entomyza	-	-	-	385	Hawks	-	-	-	201	
Eopsaltria	-	-	590,	591,	595	Herodias	-	-	187	
Ephthianura	-	-	-	689	Heron	-	-	-	183	
Eremiornis	-	-	-	762	Heteractitis	-	-	-	156	
Erismatura	-	-	-	80	Heteromyias	-	-	-	664	
Erythrogonys	-	-	-	150	Heteropygia	-	-	-	161	
Eudynamis	-	-	-	247	Hieracidea	-	-	-	236	
Eudyptula	-	-	-	3	Himantopus	-	-	-	119	
Eulabeornis	-	-	-	171	Hirundo	-	-	-	458	
Eupodotis	-	-	-	113	Histriophaps	-	-	-	344	
Eurostopus	-	-	-	363	Honey-eaters	507,	523,	572,	634,	636
Eurystomus	-	-	-	360	Hydralector	-	-	-	164	
Excalfactoria	-	-	-	133	Hydrochelidon	-	-	-	65	
Falco	-	-	-	233	Hydroprogne	-	-	-	55	
Falcunculus	-	-	-	514	Hylacola	-	-	-	766	
Field-Wrens	-	-	-	680	Hypotaenidia	-	-	-	172	
Fig-Birds	-	-	-	428	Hbis	-	-	-	179	
Finches	-	-	-	474	Jabiru	-	-	-	184	
Flycatchers	-	-	-	640	Jackass (Laughing)	-	-	-	325	
Fly-eaters	-	-	697,	768	Jacana	-	-	-	164	
Fly-Robin	-	-	-	664	Jumper	-	-	-	432	
Fregata	-	-	-	98	Jay	-	-	-	396	
Frigate-Birds	-	-	-	98	Kestrel	-	-	-	234	

Kingfishers	-	-	323	Neophema	-	-	292
Kites	-	-	224, 230	Nettion	-	-	90
Knots	-	-	159	Nettopus	-	-	74
Koel	-	-	247	Nightjars	-	-	362, 368
Lalage	-	-	636	Ninox	-	-	202
Larks	-	-	471, 935	Nisaetus	-	-	225
Larus	-	-	70	Notophox	-	-	188
Leatherhead	-	-	387	Numenius	-	-	144
Leucosarcia	-	-	351	Nycticorax	-	-	198
Licmetis	-	-	266	Nyroca	-	-	79
Limonites	-	-	151	Oceanites	-	-	17
Limosa	-	-	140	Oclthodromus	-	-	123
Lipoa	-	-	375	Ocyphaps	-	-	338
Lobivanellus	-	-	140	Cestrelata	-	-	34
Log-runners	-	-	625	Oreoica	-	-	513
Lophoictinia	-	-	225	Origma	-	-	686
Lophokemus	-	-	337	Orioles	-	-	428
Lophophaps	-	-	338	Orthonyx	-	-	625
Lorikeets	-	-	271	Osprey	-	-	219
Lorilets	-	-	279	Ossifraga	-	-	23
Lory	-	-	283	Owls	-	-	201
Lyre-Birds	-	-	379	Oyster-catchers	-	-	114
Macharorhynchus	-	-	656	Pachycephala	-	-	588
Macropygia	-	-	351	Pandion	-	-	210
Magpies	-	-	397	Pardalotes	-	-	474
Magpie-Lark	-	-	422	Parra	-	-	164
Majaqueus	-	-	34	Parrakeets	-	-	271
Malachorhynchus	-	-	88	Pelionomus	-	-	132
Mallee-Fowl	-	-	375	Pelagodroma	-	-	16
Malurus	-	-	768	Pelecanoides	-	-	42
Manorhina	-	-	518	Pelican	-	-	91
Manucode	-	-	418	Pelicanus	-	-	91
Martins	-	-	458	Peltohyas	-	-	121
Megalestris	-	-	71	Penguins	-	-	2
Megalurus	-	-	793	Petrels	-	-	13
Megapodius	-	-	392	Petrochelidon	-	-	458
Meliornis	-	-	523	Petroeca	-	-	664
Meliphaga	-	-	507	Petrophassa	-	-	346
Melithreptus	-	-	553	Pezoporus	-	-	397
Melopsittacus	-	-	306	Phaeton	-	-	99
Menura	-	-	376	Phalacrocorax	-	-	93
Mesophox	-	-	187	Phaps	-	-	344
Mesoscolopax	-	-	144	Philemon	-	-	385
Merops	-	-	323	Phorbetria	-	-	43
Micranous	-	-	68	Piezorhynchus	-	-	649, 645, 649
Micrœca	-	-	659	Pigeons	-	-	322
Microglossus	-	-	258	Pilot-Bird	-	-	762
Micropus	-	-	371	Pinarolestes	-	-	621
Microtribonyx	-	-	169	Pipit	-	-	471
Milvus	-	-	224	Pitta	-	-	450
Miners	-	-	518	Platalea	-	-	179
Mirafa	-	-	471	Platyercus	-	-	395
Misocallus	-	-	252	Plectorhynchus	-	-	634
Mistletoe-Bird	-	-	455	Plegadis	-	-	182
Monarcha	-	-	656	Plotus	-	-	93
Moor-Hens	-	-	165, 169	Plover	-	-	112, 142
Munia	-	-	499	Podargus	-	-	362
Myiagra	-	-	645, 647, 649	Podiceps	-	-	8
Myristicivora	-	-	353	Pecilodryas	-	-	591, 595
Myzomela	-	-	572, 575	Poephila	-	-	483
Nanodes	-	-	291	Poliolimnas	-	-	174
Native Companion	-	-	184	Polytelis	-	-	284, 290
Native-Hen	-	-	168	Pomatorhinus	-	-	611
Neochmia	-	-	490	Porphyrio	-	-	166

Porphyrocephalus - - - - -	286	Squatarola - - - - -	149
Porzana - - - - -	174	Staganopleura - - - - -	495
Pratincole - - - - -	152	Starling - - - - -	454
Priocella - - - - -	33	Stercorarius - - - - -	71
Prifinus - - - - -	33	Sterna - - - - -	55
Prionodura - - - - -	509	Stictonetta - - - - -	87
Prion - - - - -	19	Stictoptera - - - - -	499
Procelsterna - - - - -	67	Stiltia - - - - -	162
Pseudogerygone - - - - -	608, 609	Stilts - - - - -	118
Psephotus - - - - -	292	Stints - - - - -	143, 151, 161
Psitteteles - - - - -	275	Stipiturus - - - - -	747
Psophodes - - - - -	514	Stone-Plover - - - - -	114
Pteropodocys - - - - -	434	Stork - - - - -	184
Ptilonorhynchus - - - - -	427	Storm-Petrels - - - - -	13
Ptilopus - - - - -	352, 355	Strepera - - - - -	397
Ptilorhis - - - - -	419	Strix - - - - -	202
Ptilosciera - - - - -	275	Struthidea - - - - -	432
Ptilotis - - - - -	528	Sula - - - - -	99
Ptistes - - - - -	283	Sun-Bird - - - - -	571
Puffinus - - - - -	20	Swallows - - - - -	456
Pycnoptilus - - - - -	762	Swan - - - - -	50
Quail - - - - -	106, 132	Swifts - - - - -	368
Rails - - - - -	170	Syma - - - - -	328
Rallina - - - - -	172	Synœcus - - - - -	134
Raven - - - - -	394	Tadorna - - - - -	83
Recurvirostra - - - - -	140	Taniopygia - - - - -	498
Red-throat - - - - -	710	Tanysiptera - - - - -	327
Reed-Warblers - - - - -	686	Teal - - - - -	50
Regent-Bird - - - - -	508	Terekia - - - - -	138
Rhipidura - - - - -	768	Terns - - - - -	52
Rifle-Birds - - - - -	418	Thalassogeron - - - - -	44
Robins - - - - -	591, 595, 663	Thickheads - - - - -	588
Rock-Warbler - - - - -	686	Thrushes - - - - -	441, 615
Roller - - - - -	360	Tits - - - - -	708
Rostratula - - - - -	161	Tit-Mice - - - - -	689
Sanderling - - - - -	123	Tom-Tit - - - - -	721
Sandpipers - - - - -	153	Totanus - - - - -	155
Scenopus - - - - -	442	Tree-creepers - - - - -	734
Scrub-Birds - - - - -	503	Tree-Duck - - - - -	84
Scrub-Fowl - - - - -	392	Tree-runners - - - - -	734
Scrub-Robins - - - - -	755	Tree-Tit - - - - -	697
Scrub-Tit - - - - -	713	Tribonyx - - - - -	168
Scrub-Wrens - - - - -	708	Trichoglossus - - - - -	274
Scythrops - - - - -	247	Tringa - - - - -	150
Sericornis - - - - -	708	Tringoides - - - - -	156
Sericulus - - - - -	508	Tropic-Bird - - - - -	99
Shielduck - - - - -	82	Turkey - - - - -	113, 373
Shrike-Robins - - - - -	590, 591, 595	Turnix - - - - -	106
Shrike-Thrushes - - - - -	615	Turnstone - - - - -	148
Shrike-Tits - - - - -	514	Uroœtus - - - - -	217
Shovellers - - - - -	88	Uroszipias - - - - -	222
Silver-eyes - - - - -	564	Wanderer (Plain) - - - - -	132
Sisura - - - - -	644	Water-Hen - - - - -	167
Sittella - - - - -	734	Wedgebill - - - - -	513
Skuas - - - - -	51	Whimbrel - - - - -	144
Smicromis - - - - -	697	White-eyes - - - - -	504
Snipe - - - - -	158	White-face - - - - -	689
Song-Larks - - - - -	635	Wood-Swallows - - - - -	461
Sparrow-Hawk - - - - -	240	Wrens - - - - -	768
Spatula - - - - -	88	Xenorhynchus - - - - -	184
Sphæcotheres - - - - -	428	Xerophila - - - - -	689
Sphenostoma - - - - -	513	Zonæginthus - - - - -	493
Sphenura - - - - -	755	Zonifer - - - - -	118
Spoonbills - - - - -	179	Zosterops - - - - -	564







The late Capt. F. W. Hutton, F.R.S.  
(Second President of the Australasian Ornithologists' Union).

# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. V.]

1ST JANUARY, 1906.

[PART 3.

## Australasian Ornithologists' Union.

### FIFTH (ADELAIDE) SESSION.

THIS session was the best attended since the inception of the A.O.U. Those present were:—From Victoria—Dr. Geo. Horne, Mr. and Mrs. A. J. Campbell, Miss Ellie Campbell, Miss A. Dethridge, Messrs. Robt. Hall, C. F. Ladwig, A. Mattingley, F. P. Godfrey, A. G. Campbell, J. A. Hill; from New South Wales—Dr. W. Macgillivray; from Tasmania—Mrs. and Miss Roberts; from South Australia—Sir Samuel Way, Mr. and Mrs. J. Mellor, Misses Mellor (2), Messrs. M. Symonds Clark, E. Ashby, A. and F. R. Zietz, J. W. Mellor, P. Mellor, S. Mellor, R. Crompton, T. E. Crompton, A. Crompton, R. Martin, Capt. S. A. White, H. M. Smith, and H. Griffiths.

The visiting members by the express train from Melbourne were met at Adelaide on the morning of Wednesday, 11th October, by the president (Mr. F. R. Zietz) and representative members of the South Australian Ornithological Association. In the afternoon they were entertained at the Museum by Messrs. A. H. C. Zietz, F.L.S., and F. R. Zietz, who, in welcoming them, trusted that their stay in Adelaide would be a pleasant and profitable one. An inspection of the cabinet specimens of native birds, in which were type specimens and variations of species, was critically made by members of the party, who were pleased with the arrangement of the various families. The public collections in the show-cases were next viewed, and numerous rare species pointed out by the Messrs. Zietz, and the methodical manner of the mounting was favourably commented upon.

After viewing the bones of the extinct animal *Diprotodon australis* surprise was expressed at the magnitude of these old-time mammals that once roamed the plains of the continent.

The opening meeting of the fifth session took place in the Royal Society's room, Institute, North-terrace, in the evening, when Mr. E. Ashby presided over a good attendance, and welcomed the visitors from the other States.

## ANNUAL REPORT.

The hon. secretary (Mr. A. H. E. Mattingley) read the following report :—

“Your Council have much pleasure in presenting to you the fourth annual report, embodying the transactions of the A.O.U. for the year ending 30th June, 1905. During the past year steady progress has been made in the Union's affairs. The membership is increasing, and it is a matter for congratulation that most of the new members are ‘working ornithologists.’ *The Emu* as a journal still maintains its standard of excellence, and requests have been made from outside countries for permission to republish some of the articles contributed to it, whilst, on the other hand, many ornithological societies from different parts of the world are making application for exchange of journals. Subscribers have also been presented with a ‘Dichotomous Key’ as an aid to the study of ornithology in the field.

“Efforts have been made by the Council to establish national parks and reserves as sanctuaries for our avifauna, and to prevent the alienation of river and creek frontages, the habitats of many of our birds, and movement also has been made to bring into uniformity the game laws of the Commonwealth. Special efforts have been made to protect the Penguins, which are being slain in thousands yearly for their oil, with the result that the Government of Tasmania have notified your Council of their intention of co-operating with the Government of New Zealand in protecting these birds on Macquarie and other islands south of New Zealand. Two representative members of the Australasian Ornithologists' Union were appointed as deputies to attend the International Ornithologists' Congress held in England during June, 1905. The Council also approved of the design of a badge to be worn at ornithological functions. Members of the A.O.U. will be more readily discernible thereby.

“To supply the increasing and popular demand for nature study, several natural history societies have been formed, and it is a matter for congratulation that the ‘Bird Observers' Club’ has been successfully inaugurated, whilst the Field Naturalists' Club of Victoria, which has had a long and successful career, has been exceptionally fortunate through the accessions to its junior section.

“One coloured plate, portraying three previously unfigured Australian birds, was issued with vol. iv. of *The Emu*, and the Council would be glad if members would send in during January any notes they may have made up to the end of the year, especially on the migration of the birds of their districts.

“The thanks of the Union are again due to Colonel C. S. Ryan for the gratuitous use of his rooms for Council meetings.

"Reports from lighthouses have been regularly received, and valuable information is being collated therefrom, as will be seen by the next report."

#### LIGHTHOUSE REPORTS OF BIRDS STRIKING THE LANTERN.

In the absence of Mr. D. Le Souëf, Mr. J. W. Mellor read this report, which is as follows:—

"The following is an epitome of the reports from the lighthouse-keepers for the last two quarters in 1904 and the first in 1905, and although most of the birds mentioned are sea birds, there are a few land birds, and it is the latter, of course, that are needed. The most interesting information so far is that from the islands in Bass Strait, especially Cape Wickham, and more is gradually being learnt about the movements of the birds between Australia and Tasmania, although it will be a few years before we can expect to gain much information, as few of the smaller birds strike hard enough to be killed, and consequently they are not always secured and identified; possibly, as the lighthouse-keepers become more interested in the work, so will we gain in information.

"Most reports have naturally come from New Zealand, with its long coast line, and Mr. T. J. Cox, the principal keeper of the Cape Saunders Lighthouse, reports that when this lighthouse was erected 30 years ago the birds used to strike it nearly every night, but now only do so in thick or foggy weather. In the last quarter in 1904 two Terns struck in misty weather, but got away; two New Zealand Pipits, also in foggy weather, when one was killed; also two Banks Petrels, two White-faced Storm-Petrels, and one European Starling; only the latter was killed. During the first quarter of this year several birds struck, mostly sea birds, but only two were killed and secured—namely, a New Zealand Pipit and a Black-bellied Storm-Petrel.

"At Cape Palliser Mr. R. M'Iver states that in the last quarter in 1904 only two kinds of birds were secured—the Grey-backed Storm-Petrel and the Starling. He says that very few sea birds fly against the lantern; those that do strike are mostly small land birds. The two Starlings came down the cowl of the lantern after the lights were put out in the early morning. In January, 1905, only one bird was seen to strike—namely, a European Goldfinch—but it was not killed.

"Mr. J. Anderson reports that sea birds rarely strike the lantern at Dog Island, but that land birds, such as European Skylarks, Sparrows, and Starlings, sometimes do on very dark nights, but that none have struck lately.

"At Cuvier Island Mr. L. Thompson states that in the third quarter of 1904 15 Petrels struck, but only three were killed,

all *Puffinus griscus*. They came mostly in thick weather. In the fourth quarter four more Petrels struck, but only one was killed, a White-faced Storm-Petrel. In the first quarter of 1905 only two Petrels struck; one, a Cook Petrel, was killed. The keeper states that only Petrels strike the lantern; they never see any land birds.

"The principal keeper at Tiri Tiri, Mr. H. A. Wakefield, states that only two birds struck the lantern, both in August of last year; they were *Puffinus griscus*. He says that very few birds strike this lantern.

"At Cape Maria Van Diemen Mr. P. J. Voyle reports that five Petrels struck in the third quarter of 1904, but none were killed or captured. In the last quarter nine Petrels struck, all in gloomy weather, and only one was killed, a White-faced Storm-Petrel.

"Mr. S. Hart, the principal keeper, states that at Moko Hinou Lighthouse, in the third quarter of 1904, nine Mutton-Birds (*Puffinus griscus*), two Diving-Petrels, and six White-faced Storm-Petrels struck the lantern; nine were killed. He states that birds striking this lantern are seldom found, even though they may be killed. In the fourth quarter about thirty-five Storm-Petrels struck, and none killed; also two *Puffinus nugax*, one *Puffinus gavia*, one *Cestrelata mollis*, one Diving-Petrel, and two Grey-backed Storm-Petrels. These birds struck both in clear and thick weather.

"At Cape Egmont only one bird was reported to have struck, but it could not be secured or identified.

"Mr. W. J. Arnold, of the East Cape Lighthouse, states that in the last quarter of 1904 two New Zealand Bronze-Cuckoos struck, and also a Long-tailed Cuckoo, but they were not secured. It was blowing hard at the time.

"At Stephens Island the keeper reports that from June to December, 1904, only *Prion turtur* struck the lantern, and this species did so in great numbers, but were seldom killed. As they bred on the island, it is easy to account for so many of one species striking the lantern.

"Principal keeper John Jess, of Centre Island Lighthouse, mentions that in the last quarter of 1904 only two birds struck—namely, a Diving-Petrel and a Broad-billed Prion.

"During the last quarter of 1904 the principal keepers of the lighthouses at Portland Island, Cape Campbell, Jack's Point, Dog Island, Kahurangi Point, and Farewell Spit reported that no birds had struck during that period.

"Four reports have been received from Tasmania. One, from Mr. G. H. White, the superintendent at Goose Island, states that in June last a Black-backed Porphyrio (Bald-Coot) and a Diving-Petrel struck the lantern; both were killed.

"At Swan Island Mr. Hemsley mentions that in December,

1904, three Short-tailed Petrels (Mutton-Birds) struck; only one was killed.

“Mr. Rockwell, of the Low Head Light, states that on 17th October, 1904, one Olivaceous Thickhead struck and was secured. He mentions that very few birds strike this lantern.

“From Cape Wickham Lighthouse, Mr. Johnston, the superintendent, sends an interesting report, as usual, for the months of April and May of this year. He states that during April a Fan-tailed Cuckoo, numbers of Pink-breasted Robins, many Dusky Fantails, and one Orange-bellied Grass-Parrakeet, and on 4th May many more Pink-breasted Robins struck. The Fantails and Robins struck on the east side of the lantern, at a little after 8 o'clock, in the evening, but the Parrakeet struck at 11 o'clock. Many White-browed Wood-Swallows (*Artamus superciliosus*) appeared early in April. This is the first time this latter bird has been recorded from here. (See *Emu*, vol. v., p. 52.) The Robins and Fantails were evidently both migrating in considerable numbers. Mr. Johnston states that many small birds strike the lantern, but not with sufficient force to kill themselves, and therefore they are not always secured.

“From New South Wales one report has been received, and that from Mr. Wm. Gardiner, the principal keeper at Nobbys Lighthouse. He states that in October, 1904, a Brown Quail struck the lantern and was killed, and in December a Wedge-tailed Petrel struck and got stunned. He also states that for several years past very few birds have struck this lighthouse.

“Two reports have come from Queensland—one from Mr. W. Picken, superintendent of the North Reef Lighthouse, in which he states that he secured only two birds that struck the lantern—namely, a Noddy Tern and a Wedge-tailed Petrel, the skins of which he sent. He also says that birds strike the lantern at all points of the compass, and that most of them fall into the sea, so cannot be secured. It is nearly always in thick misty or rainy weather that birds strike, and it is impossible to tell numbers striking, as they often after striking fly away for a few yards and then strike again, often numbering dozens in a night, no matter which point of the compass the wind may be from. Now and again a small Kingfisher has struck the lantern.

“The other report is from Mr. T. M'Kee, of Lady Elliot Island, in which he states that on 3rd March, 1905, three small birds of a grey colour struck, but they were not killed, so he could not secure one for identification.

“Only one report comes from South Australia; it is from Mr. H. W. Transon, of Ironlenda Light. He states that a Teal struck the lantern on the north side on 13th August. It fell to the ground, but got away in the darkness.

“The Council of the A.O.U. desire to heartily thank those who have so kindly helped in this interesting and important work in

the different States, and hope that more information still may be obtained during the coming year."

Here follows the balance-sheet, which was read by the hon. treasurer (Mr. F. P. Godfrey), showing that the finances of the Union are in a satisfactory condition. Its adoption was moved by Mr. R. Crompton (Adelaide) and seconded by Mr. J. A. Hill (Victoria).

PRESIDENT'S ADDRESS: ON EUROPEAN AND OTHER BIRDS  
LIBERATED IN VICTORIA.

Owing to the absence abroad of the president (Capt. F. W. Hutton, F.R.S.),\* Colonel C. S. Ryan, P.M.O., Vict., kindly prepared the following address, which was read by the hon. secretary:—

It is interesting to notice how many of the European birds imported into this country and liberated have adapted themselves to new surroundings and thriven. In their native land they are kept more in check by many causes, such as death or migration, trapping, severe cold, &c. Here they are free from those difficulties, and have besides a much milder climate and abundance of food. Consequently the natural increase is much more rapid, and they generally nest twice, and sometimes thrice, in the season. It must be noticed, also, that the European birds now acclimatised here are of a strong and vigorous type, having ancestors accustomed to human habitations for centuries past. Our native birds, on the contrary, have only seen houses for a comparatively few years, hence they retire and keep to the bush as buildings increase. But not so most of the imported ones: these find a retreat among suburban gardens, and although heavy toll is paid by those that make open nests, in consequence of the raids of domestic cats, boys, &c., yet, by laying two or three clutches, they steadily increase. Such species as nest further afield or in more secure places naturally increase at a greater rate. These are fairly secure from birds of prey, such being generally shot whenever they approach human habitations, and are consequently scarce in settled districts.

Many other kinds of birds than those most adapted to towns and cities have also been imported and liberated from time to time, but have not succeeded in establishing themselves. Perhaps this is just as well in some cases. It is probable that those that did not thrive were not so local in their habits, and therefore lost touch. One of the other causes may be that Australia is a big country, and a further one that they may not have been imported in sufficient numbers, or have been turned out in unsuitable localities.

The birds that have succeeded are mostly omnivorous, and both the reputed seed-eaters and insect-eaters will frequently eat fruit when it is to be obtained, but during the rest of the year live on their natural food.

The first bird we will take will be the Starling (*Sturnus vulgaris*).

\*It will be learned with regret that Capt. Hutton died at sea on the 27th October (see Obituary Notice).—EDS.



Owing to its considerable increase, and the fact of its living in flocks, it is more prominent than most of the other birds—besides having had special laws suggested for its destruction, because it often eats fruit when opportunity offers, and it has provided columns of newspaper matter as to whether it is useful or otherwise. Starlings were first introduced in 1863, when 36 were liberated; in 1864, 6 were turned loose; in 1866, 15 more; and in 1871, about 20. These birds lived in flocks, and so kept touch with one another, and were able by so doing to increase until they have reached their present number, which must be considerable. They are steadily extending their area, being found well established in Tasmania, and almost over the whole of Victoria, although much more plentiful in the southern portions. So far very few have found their way into Riverina, where the residents are longing for their arrival, to help them to battle against the huge armies of locusts and caterpillars that often infest those districts. These birds feed on the ground, and devour immense numbers of the destructive wire-worms, also the bluish grubs that destroy so much grass by eating the roots away, as well as similar insects, but unfortunately they find it difficult to resist luscious cherries and other fruit growing on unprotected trees, whose owners then forget all about the inestimable good the birds have done for them during the past eleven months of the year and wage war against them in various ways. These birds are early risers, and rarely finding any human beings looking after the fruit in the early hours, help themselves, to the natural discomfort of the owner. I should judge that Starlings will increase far more rapidly than any other imported bird; they are swift of flight, and well able to take care of themselves, are also pugnacious, especially in driving some other bird out of a favourite nesting-hollow. If a bird of prey is seen, a large flock will rise as one bird and circle round and over the object of their fear as it flies along. I have seen a flock of considerably over a thousand Starlings doing this, and it was an interesting sight to watch their evolutions in the air.

The next most prominent and much abused bird is the Sparrow (*Passer domesticus*). 120 were first liberated in the Botanical Gardens in 1863; in 1864, 125 more; in 1866, another lot, and in 1867, many birds about Melbourne were caught and were distributed generally over the State of Victoria, and in 1872, 100 more were imported and liberated. They have spread from the various centres well over Victoria, also in southern New South Wales and in South Australia, as well as in Tasmania and the intervening islands. They follow settlement, and are rarely found far away from human habitations.

They will eat almost anything—fruit, insects, seeds, &c.—and have a great weakness for grain as it is just ripening. After the nesting season they often go in flocks and are then most troublesome to the farmer and his wheat-fields. In America and other places frequent examinations have been made of the contents of Sparrows' crops, and it was usually found that whatever food

FINANCIAL STATEMENT OF THE  
For Year ending

£ s. d.	£ s. d.	RECEIPTS.
6 2 5		Balance from last year, 1904, General Fund.
		<i>Receipts by Hon. Treasurer.</i>
	36 0 6	Subscriptions—Arrears, 1904.
	68 6 0	Year current, 1905.
	17 5 2	In advance.
121 11 8		
		<i>Coloured Figure Fund.</i>
	6 3 11	Balance from last year, 1904.
	5 19 0	Members' donations.
12 2 11		
2 12 0		Sale of tickets, Sydney lecture.
11 7 0		Sales of <i>Emu</i> .
3 0 0		Advertising in <i>Emu</i> .
0 14 6		Binding members' copies &c.

## AUSTRALASIAN ORNITHOLOGISTS' UNION.

30th June, 1905.

		EXPENDITURE.					
		£	s.	d.	£	s.	d.
Printing <i>Emu</i> .. .. .		57	19	6			
Reprints (25) .. .. .		0	7	6			
Inserting and Illustrations .. .. .		9	0	0			
Authors' Corrections .. .. .		3	4	0			
Extra small type .. .. .		5	2	6			
Printing Additional and Inserting .. .. .		0	6	0			
		<hr/>					
Illustrations—					75	19	6
Blocks (12 Half-tone) .. .. .		7	5	10			
1 Zinc-etched Block—"Flight of Birds" .. .. .		0	6	0			
		<hr/>					
					7	11	10
Postage—							
Hon. Secretary .. .. .		9	4	7			
Hon. Treasurer .. .. .		2	3	4			
Hon. Editors .. .. .		0	18	9			
<i>Emus</i> sent to English agents .. .. .		0	12	4			
Books to Adelaide and return (audit) .. .. .		0	4	4			
		<hr/>					
					13	3	4
Stationery—							
Printing Post Cards .. .. .		0	15	0			
Printing Envelopes .. .. .		0	12	6			
Memo. Forms .. .. .		0	8	0			
Letter Book .. .. .		0	5	0			
		<hr/>					
"Egg in hand" Circulars .. .. .					2	0	6
					0	17	6
Congress Expenses—							
Printing Tickets (Hobart) .. .. .		0	4	0			
Distributing Show Cards .. .. .		0	7	6			
Printing Circulars .. .. .		0	8	0			
Hire of Royal Society's Hall .. .. .		1	5	0			
Hire of Queen's Hall .. .. .		3	3	0			
Show Cards and Hangers .. .. .		1	5	0			
Posters for Lantern Lecture .. .. .		0	8	6			
Advertising Lecture .. .. .		0	5	0			
		<hr/>					
Printing Lists of Birds Striking Lights .. .. .					7	6	0
					1	4	6
General Expenses—							
Binding <i>Emu</i> .. .. .		2	13	7			
Fire Insurance Policy .. .. .		0	5	5			
Exchange and Poundage .. .. .		0	17	7			
Exchange, Foreign Bills .. .. .		0	1	2			
Bank Charges (as per Bank Book) .. .. .		0	10	0			
		<hr/>					
*Balance at Bank of Australasia, 30th June, 1905 .. .. .					4	7	9
					44	19	7
		<hr/>					
		Less £8 15 0					
		3 3 0					
		<hr/>					
		11 18 0					
		<hr/>					
					157	10	6

\* Owing to the death of the Lithographer, the account for coloured plate was not sent forward till after the books were closed.

(Approx.) £8 15 0

3 3 0

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£11 18 0*Audited and found correct.*M. SYMONDS CLARK, }  
EDWIN ASHBY, } *Auditors.*

29/9/05

FRED GODFREY, *Hon. Treasurer A.O.U.*

BALANCE SHEET OF THE  
Year ending

ASSETS.		£	s.	d.
Emu journals in stock .. .. .		65	0	0
Library (Exchange) .. .. .		10	10	0
Illustration blocks .. .. .		5	10	0
Arrears of subscriptions estimated to realize .. .. .		48	8	3
Bank balance—				
Coloured Figure Fund .. .. .	0	0	1	
General Fund .. .. .	44	19	6	
		44	19	7
		£174	7	10

LECTURE

	£	s.	d.
Sale of Tickets (Sydney Lecture) .. .. .	2	12	0
Debit Balance .. .. .	3	5	0
	£5	17	0

STATEMENT OF  
Year ending

	£	s.	d.
Balance from last Statement .. .. .	6	3	11
Members' donations .. .. .	5	19	0
Trade advertisements .. .. .	3	0	0
Balance in bank .. .. .	0	0	1
	£15	3	0

Melbourne, 30th June, 1905.

FRED GODFREY, *Hon. Treasurer Australasian Ornithologists' Union.*

AUSTRALASIAN ORNITHOLOGISTS' UNION,  
30th June, 1905.

LIABILITIES.		£	s.	d.
Subscriptions in advance	.. .. .	17	5	2
Outstanding accounts—				
Lithographer's Plate— <i>Xerophila castaneiventris</i> , <i>Mirafra woodwardi</i> , <i>Amytis housei</i>	.. .. .	8	15	0
Artist drawing	.. .. .	3	3	0
Balance, surplus	.. .. .	145	4	8
		<hr/>		
		£174	7	10

ACCOUNT.

	£	s.	d.
Hire of Queen's Hall	3	3	0
Printing Bills and Advertising Lecture	2	14	0
	<hr/>		
	£5	17	0

COLOURED FIGURE FUND,

30th June, 1905.

	£	s.	d.
Lithographer's Plate of <i>Xerophila castaneiventris</i> , <i>Mirafra woodwardi</i> , <i>Amytis housei</i> (approximate)	8	15	0
Artist drawing	3	3	0
Debit balance, Sydney Lecture	3	5	0
	<hr/>		
	£15	3	0

*Audited and found correct.*

CHAS. L. BARRETT, } *Local Auditors.*  
EDWD. D'OMBRAIN, }

happened to be the most plentiful, was that which was eaten most. The amount of injurious insect life eaten by them is very large, and they also consume the seeds of noxious weeds. They will undoubtedly spread over Australia in course of time, despite of all means taken to check them. They nest two or three times in the season, building their bulky nests either in hollows or thick foliage, boxthorn hedges being favourite places for them, and in these they are fairly secure. Various means have been used for trapping and poisoning them wholesale, but without much success.

Java Sparrows (*Padda oryzivora*) were also imported in considerable numbers. In 1863, 80 were liberated, in 1864, 220, and in 1872, 235 : but from some cause or another they did not succeed, and fortunately all died or were killed out. They were hard-billed birds, and stronger birds than the Sparrow. Their food consisted principally of seed, but they also took insects and fruit, and it is just as well, I think, that they did not thrive.

In 1863, 45 Chinese Sparrows were liberated, and in 1864, 20 more ; but luckily they also were not in sufficient numbers to obtain a foothold, and all gradually disappeared.

The Indian Minah (*Aeridotheres tristis*) was first introduced in 1863, when 42 were liberated : in 1864 40 others were let out, in 1866 another small lot, and 70 more in 1872. These birds have fortunately increased very slowly, and are only to be found near the larger towns, and are distributed over a small portion of Victoria, and that mostly in the neighbourhood of the metropolis. They are something like the Sparrow, and eat seed and insects, being also very fond of fruit, either hard or soft kinds, and being a fair-sized bird, soon make havoc with any sort they attack. They are plain-coloured birds, have no song, except some disjointed but slightly musical notes, and have little to recommend them. They seem very local, and it will be a long time before they increase in sufficient numbers to be of much trouble to the fruit-growers in the country districts. They are weak flyers, easily caught by birds of prey, and instead of taking refuge in thick vegetation, should a Hawk appear, they noisily fly in small companies near their enemy, or sit on some dead tree or other conspicuous place to watch him, consequently they are easily and frequently caught.

Chaffinches (*Fringilla calcebs*) were brought out in considerable numbers, 50 being turned out in 1863, 40 in 1864, and 40 more in 1872 ; but they do not seem to have thriven and there are few, if any, left now.

Fifty Greenfinches (*Ligurinus chloris*) were also liberated in 1863, also 40 in 1864, and 20 more in 1872. These birds have done fairly well, and are now established near the metropolis and in the tea-tree scrub round Port Phillip, but their increase is nothing like so rapid as that of the Starling or Sparrow. Their habits are, of course, well known. Being of an inconspicuous colour, and living in fairly thick cover, they do not suffer from birds of prey as much as some other birds.

Goldfinches (*Carduelis elegans*) are thoroughly established, and have done well, being exceedingly plentiful both near Melbourne and also in the thick vegetation round Port Phillip: at Geelong they are especially numerous, nesting in the trees planted in the streets. These little birds are also plentiful in many parts of Tasmania, especially near Hobart. The first consignment of 34 was liberated in 1863, and 20 in 1864: these seem to be the only ones turned out, so they could not have scattered much, and must have gradually increased from one locality. The Goldfinch is apparently strictly a seed-eating bird, and does not seem to trouble fruit-growers.

Yellow-Hammers (*Emberiza citrinella*) have also failed to establish themselves although 15 were turned loose in 1863, and 15 more in the following year: but they were hardly in sufficient numbers to obtain a foothold, and gradually disappeared.

Siskin Finches (*Chrysomitris spinus*) were also tried, 40 being liberated in 1864 and 20 in 1872: but they also got scattered, and, losing touch with one another, died out.

Seven English Robins (*Erithacus rubecula*) were let loose in 1863 at the Royal Park, and four more in 1872, but, being so few, they soon disappeared.

In 1863 a small lot of Thrushes (*Turdus musicus*) were turned out, and 28 in 1872, and a small lot near Sydney in the same year. These birds, being very local, remained about the Botanical Gardens and neighbourhood, and so kept together, and gradually, though slowly, increased and spread, until now they are to be found all round the neighbourhood of Melbourne and suburbs, although they have not spread much into the country, appearing loth to leave the protection of the gardens. It will be many years before they increase in sufficient numbers to be found all over the State. They breed two or three times a season, often using the same nest. In consequence of their colour and retiring habits, they are often passed by unseen. They are not as numerous in some places now as they were a few years ago, and I think the reason is that they have gone further afield. Curiously enough, one of their notes is almost identical with that of the Australian Thrush (*Geocichla lunulata*).

The first lot of Blackbirds (*Turdus merula*) that arrived here was in 1864, when 6 were liberated in the Melbourne Botanical Gardens: in 1866 17 were turned out, and in 1872 22 more, as well as a few near Sydney. They, like the Thrush, remained about the suburban gardens, and have increased, if anything, slightly faster than the Thrush. They are also more conspicuous in colour, and noisier, and therefore soon draw attention to themselves: they are also to be found in all the suburban gardens round Melbourne, and their beautiful note is to be frequently heard. Like the Thrush, they are mostly ground-feeding birds, and both take fruit, but principally what they find lying on the ground. Like the Indian Minahs, Starlings, and Sparrows, they are very partial to figs and grapes, and the only safe way to grow these fruits near Melbourne

is to cover them with netting. The Blackbird is not increasing very fast, and since its house is principally in suburban gardens, it can easily be kept in check if necessary.

Sixteen Ortolans (*Emberiza hortulana*) were liberated in 1863, but, being so few, they soon disappeared, as did 18 Canaries that were let loose in 1872.

Skylarks (*Alda arvensis*) are now well established in the district round Melbourne, and are gradually spreading, and have evidently found a permanent foothold, but so far their increase has been very slow. Fortunately they are very local, and those liberated mostly took up their quarters in the country near the mouth of the Yarra, where they were undisturbed, and spread principally from there. A small lot was first let loose in 1863; 80 in 1867; 30 in 1870 and 1872, as well as some near Sydney, and 100 in 1873-4. Many of the latter consignment were liberated at Mount Ridley, a few miles from Melbourne, but they were subjected to a heavy rain storm, followed by very cold weather, when still weak from their long confinement, and many died from the effects of exposure to the elements. It is satisfactory, however, to know that this bird has been acclimatized, and so far no complaints have been made against it.

In 1872 8 Turtle Doves (*Turtur communis*) were imported, and this small lot soon disappeared, but in 1870 a number of Indian Turtle Doves (*Turtur suratensis*) were liberated at the Zoological Gardens, and 16 more in 1874, which remained about there and gradually increased. They are now spreading round Port Phillip on its eastern side, where the tea-tree scrub offers them capital cover. They will probably continue to spread in scrubby country, but slowly. There are many of these birds at the Zoo and in its neighbourhood, and now and again small lots have been sent to other towns, but as a rule they have not succeeded, being destroyed by birds of prey.

Twenty Lesser Pin-tailed Sand-Grouse (*Pterocles exustus*) were turned down in 1863; 10 in 1864 were liberated at Phillip Island, and a similar number in 1872; but the localities were evidently not suitable for them, nor probably were the numbers sufficient, as they did not thrive or increase, and soon disappeared.

Californian Quail (*Callipepla californica*) were for a time more successful. Six were liberated in 1863, but so few could not succeed, but in 1872 a larger number was let out at Gembrook, Victoria, and in 1874 40 more: for two years they did well, and many nests were found and young seen, but one season they all disappeared. It is presumed that they migrated elsewhere: anyhow, they were never heard of again, and now it is probable there are very few, if any, wild in Victoria.

In the Gembrook Reserve both Indian Jungle Fowl and about 170 Guinea Fowls were liberated, but their enemies were too many for them, and they gradually grew less and less, despite of those that nested, and in about three years all were gone; the same with the Peafowl that were turned out at the same time and place.



Chukar Partridges (*Caccabis chukar*) were also introduced, 23 being turned out in 1864, 13 more in 1865, and 8 in 1872, as well as some French Partridges in 1873; but they were too few to be of any value, and were soon lost sight of.

In 1864, 80 Chinese Quail (*Excalfactoria chinensis*) were liberated near Melbourne and 70 at Phillip Island, and 60 more in 1872; they are closely allied to the King Quail, and may easily be mistaken for that bird, unless handled. I think they have disappeared, but there may still be a few about that have escaped observation or been mistaken for the King Quail.

Pheasants (*Phasianus colchicus*) have been liberated in considerable numbers in various parts of Victoria, and in some cases, where care is taken, they have thriven, but in other cases, where they were left to themselves, such as in the Gembrook Reserve, they gradually decreased, their principal enemies being poisoned grain, bush fires, and iguanas or monitor lizards, domestic cats gone wild, tiger cats, and native cats, besides being occasionally shot by the pot-hunter. Eight were first liberated in 1864 at Phillip Island, 30 in 1870, 15 in 1871, 70 in 1872, and over 100 in 1873. These were all liberated by the Zoological and Acclimatisation Society of Victoria, but many more were turned out by private people of which no record has been kept. The Society also sent hundreds of eggs away to various people in different parts of the State. For a time it was thought that these fine birds would become established, as they have done in some parts of New Zealand, and they undoubtedly would have in several places but for poisoned grain being laid for rabbits. The Pheasants picked this up, and were soon exterminated, consequently it is now very little use trying to acclimatise this bird except in restricted districts, unless some means are devised to prevent them getting the poisoned grain.

The last on my list is the Mallard or English Wild Duck (*Anas boschas*). Forty were liberated in 1871 in the Botanical Gardens, Melbourne, and 80 more in 1872. They bred freely, and the young that were reared flew away with the Black Ducks in the autumn; there were also a few hybrids between the two varieties; but the Mallards gradually decreased in number, and have now practically disappeared.

From the foregoing notes it will be seen that a variety of birds was introduced at one time and another, but that comparatively few obtained a foothold in the country, and those are Starlings, Thrushes, Blackbirds, Sparrows, Greenfinches, Goldfinches, Indian Minahs, Indian Doves, and Skylarks, and it is possible there may be a few Chaffinches holding their own, as well as Chinese Quail. None of these birds are increasing very fast, except, perhaps, the Starling and Sparrow, and at present the latter bird is by far the most widely distributed in Australia.

#### NEW MEMBERS AND OFFICE-BEARERS.

The following new members were elected, viz. :—Victoria—  
Surgeon-General Williams, E. J. Forbes, J. A. Ross, J. Freeman,

F. Howe, Z. Gray, E. Brooke Nicholls, C. P. Kinane, Librarian Commonwealth Parliament, Curator Warrnambool Museum. New South Wales—Lancelot Harrison. South Australia—Robert Crompton, R. H. Martin. Tasmania—F. D. Barclay. Western Australia—F. Calder. England—W. E. Helman Pidsley. United States, America—Ludlow Griscom, Worthington Society for the Investigation of Bird Life.

The office-bearers for the year 1905-6 were then duly elected, viz. :—President—Colonel C. S. Ryan, P.M.O., Victoria; vice-presidents—Messrs. D. Le Souëf, C.M.Z.S., &c., and J. W. Mellor; hon. treasurer—Mr. F. P. Godfrey; hon. secretary—Mr. A. H. E. Mattingley; hon. editors of *The Emu*—Messrs. A. J. Campbell, Col. M. B.O.U., and C. F. Belcher, M.A., LL.B.; members of Council—Messrs. Robt. Hall, F.L.S. (Victoria); P. Peir (New South Wales), A. W. Milligan (Western Australia), W. M'Ilwraith (Queensland), Colonel W. V. Legge, F.Z.S. (Tasmania), Capt. F. W. Hutton, F.R.S. (New Zealand).

The elections by the Council of Mr. H. Kendall as advisory editor and Mr. C. L. Barrett as press correspondent were ratified.

#### SECOND DAY.

A large number of the visiting and local ornithologists visited the Reedbeds on Thursday afternoon, 12th October, for the purpose of observing some of the bird life for which this locality is noted. They were received by the vice-president of the Union (Mr. J. W. Mellor). An inspection of Holmfirth, the estate of Mr. and Mrs. John F. Mellor, was first made. Birds were seen in their natural state quite tame and confiding, showing how the little feathered friends appreciate the strict protection afforded them, not only by the Mellor family, but the whole of the residents in the neighbourhood. Mr. J. W. Mellor illustrated the tameness of the birds by showing the party nests of young Tree-Martins (*Petrochelidon nigricans*) that are building in all sorts of situations around the homestead, while the parent birds flew around the visitors without fear. The little Black-and-White Fantail (*Rhipidura tricolor*) was seen in the garden, and the Blue Wren (*Malurus cyaneus*) brightened up the scene with its gay plumage and soft trilling notes. Flycatchers, Honey-eaters, Magpies, Landrails, Swallows, Martins, Laughing Jackasses, and innumerable other birds were seen, all enjoying their liberty in a veritable paradise of verdure among the old red gum and other native trees. In addition to the birds in their native liberty there are numerous large aviaries on all sides containing many rare birds, and those whose instincts make them wanderers afar, and but for some slight retention would probably depart in the cold weather; but they cannot be termed "caged," as the spacious aviaries contain trees and plants, in which the

birds are quite at home. Many of the occupants breed and rear their young better perhaps than if they were totally free. Various species of Cockatoos and Parrots were seen, from an exceptionally large White Cockatoo (*Cacatua galerita*) down to the pretty little Warbling Grass-Parrakeet (*Melopsittacus undulatus*) and Elegant Grass-Parrot (*Neophemia elegans*), both of the latter having their young and eggs in the nests. Native Doves and Pigeons of all varieties and Finches were in the collections, and several species of Quail roamed over the ground floors of the aviaries. One of the Swamp-Quail (*Synacus australis*) was observed sitting on her nest of nine or ten eggs. Stone-Plovers (*Edicnemus grallarius*) were exceedingly tame, while Wild Ducks, Maned Geese, &c., were quite at home. Cape Barren Geese (*Circopsis nova-hollandiae*) breed in wire-netting enclosures. After bidding adieu to Holmfirth and its hospitable family the visitors repaired to Weetunga, Capt. S. A. White's picturesque home. The Captain cordially received the party, and showed them a portion of his large collection of African birds that he secured at the close of the Boer war. Surprise was expressed at the magnitude of the collection, and the amount of hard work entailed in securing and preserving them. Afternoon tea was presided over by Capt. White's mother and sister (Mrs. Samuel and Miss Eva White). A hearty vote of thanks was accorded to those who had so hospitably entertained the visitors.

There was a large and appreciative audience at the University Theatre, North-terrace, in the evening, when Mr. Robert Hall, F.L.S., C.M.Z.S., gave a lecture upon his travels in the Far East, entitled "A Naturalist's Tour through Japan, Corea, Manchuria, and Siberia." Sir Samuel Way, Bart., occupied the chair, and extended a hearty welcome to the lecturer.

Mr. Hall stated that he had been able, during his three months' sojourn in Siberia and Manchuria, to collect and make the first list of birds for that country. It included 402 skins, and had been favourably reported on in London by naturalists. The lecture was illustrated by a large number of specially coloured characteristic photo. slides from scenes taken throughout the journey. The proceeds of the lecture will be placed to the credit of the coloured figure fund of *The Emu*, the official journal of the Union. Mr. Hall was accompanied by Mr. R. E. Trebilcock, of Geelong, and the journey was of peculiar interest, because it was undertaken just previous to the recent great war. The tourists arrived in Japan in early spring. They were, Mr. Hall said, delighted with the country and its inhabitants, which were aptly termed "The land and people of smiles." Japan and Australia were closely connected as far as their avifauna were concerned. The Snipe, two species of Swifts, besides several other kinds of birds, nested in the former country and wintered in the

latter. In Corea the people were not in such a high state of civilisation as in Japan. Some rare birds were collected in this province. In Vladivostock the travellers were naturally treated with some suspicion, but matters were eventually settled, and they were allowed to proceed on the Trans-Siberian railway. Getting out at the River Lena they travelled 3,000 miles, principally by boat, to its mouth at the Arctic Ocean, where they took photographs under a midnight sun. The great tracts of pine forests were vividly described, as were the vast tundras—low, marshy country, covered with moss and stunted vegetation from 18 inches to 3 feet in height, this latter country being the breeding home of several wading birds—Grey and Golden Plovers, Stilts, Sandpipers, &c. The journey up and down the river was not undertaken without a great amount of labour and discomfort. Continuing his journey through Moscow and St. Petersburg, Mr. Hall returned to Australia, visiting England, where the ornithological results of his trip were published.

### THIRD DAY.

On Friday afternoon, the 13th October, the members of the Union were entertained by Mr. A. C. Minchin at the Zoological Gardens, where they inspected the animals and birds. The latter attracted much attention from the specialists in this branch of zoology. The beautiful Flamingoes in their pond were specially admired, also the lovely white variety of Peafowl. The native birds, in the new spacious wire-netting enclosures, were objects on which the ornithologists dwelt for some time, especially a cage set aside for confiscated birds under the *Birds Protection Act*, which was then well stocked with Shell Parrots or Warbling Grass-Parrakeets. Six or eight of the rare Bourke Grass-Parrakeets, with the roseate undersurfaces, were seen in the flesh for the first time by some of the visitors, while in another aviary there was quite a rainbow of Broad-tailed Parrots (*Platyserci*). Being the mating season, many of the birds were "showing off," notably the Stone-Plovers, Pacific Gulls, and a male Wild Turkey or Bustard. The last-mentioned, by expanding his tail over his back and inflating his neck to an abnormal size, was transformed into a curious object as he strutted about. The party was afterwards hospitably entertained by Mr. and Mrs. Minchin at afternoon tea. A hearty vote of thanks was carried, and an expression of approbation was given to the way in which the gardens were being conducted.

The final business meeting of the fifth annual session of the Union was held in the Royal Society's room, Institute, North-terrace, in the evening, when a number of interesting papers

was read upon various bird subjects. One of the vice-presidents (Mr. J. W. Mellor) presided.

The question of more uniform laws for the preservation of the game and birds of the Commonwealth was brought forward, as it was thought that the whole of the States should join in the movement upon an equal basis, it being unfair for birds to be protected in South Australia and as soon as they got over the border to be ruthlessly destroyed. A communication was received from the Prime Minister relative to this movement. He "did not see his way clearly," and therefore required more forceful pressure to bring about a reformation ere it was too late to save many of the rarer birds.

On this subject Mr. C. F. Belcher, M.A., LL.B. wrote:—

"I am sorry to say I shall not be able to put the game unification scheme before the present session, as I had intended. However, I will codify the conclusions I have arrived at, so that the matter may be mentioned at the Congress:—

"1. Inasmuch as the present South Australian Act embodies all the most useful provisions of the A.O.U. model law, I think it should be taken as a basis. There are one or two points in which existing provisions of the Victorian Acts could be adopted with advantage; this could be done perhaps best by a short amending Act.

"2. In each of the other States the present game laws should be repealed so far as they relate to birds, and a new law, framed on the lines of the South Australian Act, should be passed.

"3. The Commonwealth Parliament *may* be able to help us by a law on the lines of the Lacey Act to regulate inter-State commerce *re* birds. I have here no copy of the Constitution, and as one will not reach me till to-morrow have not been able to answer Mr. Mattingley's letter of 6th inst. I suggest that the Council, which sits in Melbourne, should be the body to move in the direction of getting what Commonwealth legislation we can; but, of course, we are bound by the limits of the Federal Constitution (which, by the way, appear elastic enough where "union labels," &c., are in question).

"4. The local ornithological bodies in the other States and Victoria—*i.e.*, the Union, if locally organized, or other bodies affiliated with it—must do the State work, which is by far the most important. As said, little is to be done in South Australia, but in New South Wales (where *no* species is protected all the year round!) and the other States much is required. I suggest legislative sub-committees be formed in each State, with one practising lawyer, if possible (or more), in each.

"I was drafting a model law embodying the apparently best clauses, but there is so little to be added to the South Australian Act, and its language is so clear, that I think it preferable to work from that.

"In all cases *bird laws* should be kept apart from other *game laws*."

Mr. Belcher's suggestions were referred to the Council.

Upon the recommendation of Mr. Dudley Le Souëf, C.M.Z.S., it was resolved that the Victorian Government be urged to introduce a gun licence, and also reintroduce the bill dropped two years ago relating to the better preservation of Australian birds.

Mr. A. J. Campbell, Col. M. B.O.U., contributed a paper entitled "*Domestic Wild Cats versus Native Birds*." He said a great evil existed in the introduction of tame cats into the back country for the destruction of the rabbits. The remedy was now becoming worse than the evil, as the cats had become so numerous and adapted themselves so well to the situation that they had bred in large numbers, and were killing native birds wholesale. Birds that bred on the ground had little chance of rearing their young. The Union had its hands full at present with its various planks for the preservation and protection of native fauna, but it was evident that it would have to secure legislation soon to eradicate the cat pest. He advocated that sportsmen should turn their proclivities to "go out and kill" in this direction, as they would then be doing a good service to their country. A cat tax might be put on all "domestic pussies," and the money thus gained could be devoted to paying for scalps of slaughtered wild cats, and thus reduce the fast-growing evil.

Dr. George Horne referred to the recent Inter-State Conference of Inspectors of Fisheries, and the recommendation "that action be taken by each of the States with a view to the destruction of Pelicans." He moved that the Union disapproves of the destruction of this fine bird.

#### INTERNATIONAL ORNITHOLOGICAL CONGRESS.

The following report by Mr. Frank M. Littler, F.E.S., was read by the hon. secretary:—

I have the honour to report having attended as your delegate the Fourth International Ornithological Congress, held in London, under the presidency of Dr. R. Bowdler Sharpe, 12th to 17th June. The proceedings were opened on Monday evening, 12th June, by an informal reception at the Jehanghir Hall, Imperial Institute Buildings, South Kensington, when a good number attended.

The actual business commenced next morning, at 10 a.m., when Dr. Sharpe welcomed the various members, and read his Presidential Address. After transacting some routine business, the meeting adjourned until 3 p.m. At that hour Sections I., II., and IV., under their respective presidents, commenced their work. Section I. took in Systematic Ornithology, Geographical Distribution, Anatomy, and Palaeontology; Section II., Migration; Section IV., Economic Ornithology and Bird Protection.

I attended Section IV., and heard an interesting paper by Mr. T. Digby Piggott—"The Present State of the Law for the Protection of Birds in Great Britain"; and one from Sir John Cockburn—"Bird Legislation in Australia." On the latter one I spoke, giving a *résumé* of what is being done regarding bird protection in Tasmania, and threw light on some points raised by Sir John.

In Section I. the following papers were read and discussed:—By Count von Berlepsch, "On New Neotropical Birds," and "The Species of the Genus *Elainea*"; by Dr. R. Blasius, "Vorthelle und Nachtheile moderner Arten—und Unterarten Beschreibung und Namengebung"; by Dr. Louis Bureau, "La Sterne de Dougall." For some reason Section II. did not transact any business. In the evening a social gathering was held at Earl's Court—by courtesy of the Directors of the London Exhibitions Limited—an enjoyable time was spent. There were no sectional meetings on Wednesday morning, the time being very fully occupied at a general meeting, listening to some interesting papers. Time did not allow of all those set down to be read that morning. Those listed were:—Mr. F. M. Chapman, "What Constitutes a Museum Collection of Birds"; Dr. Paul Leverkühn, "Aasgeier und Kaiseradler um Horst"; Herr Otto Herman, "Stand der Ornithologie in Ungarn"; Dr. J. Dwight, jun., "Some Phases of Wear in Feathers"; Herr Otto Herman, "Recensio Critica Automatica of the Doctrine of Bird Migration"; Mr. Henry Scherrin, "The First Bird List of Eber and Peucer (1549), and its Relation to the 'Avium . . . . Historia' of Turner." Of those taken, the most interesting was that of Mr. Chapman, who told us, and illustrated his remarks by lantern slides, what was done in his (the New York) Museum with the bird collection. It would be hardly possible for a more useful, scientifically correct, and educational system to be in vogue anywhere. One thing that commended itself to me was that in addition to the collection of birds found in New York and its environs, there was one that was changed month by month, showing what birds were to be found about New York each month. Small cases of specimens are loaned out to schools for educational purposes.

In the afternoon Sections I. and III. sat. At the first-named Mr. W. P. Pycraft read an interesting paper on "Nestling Birds, and their Bearing upon the Question of Evolution," the conclusion he arrived at being that at one time all birds were arboreal in their habits. The Rev. Ernesto Schmitz read a paper, "On the Birds of Madeira," and Count von Berlepsch one entitled "Notes on Tyrannidæ." In Section III., which embraced Biology, Nidification, and Oology, Mr. F. M. Chapman read two most entertaining papers—one "A Contribution to the Life-History of the American Flamingo," and the other "A Contribution to the Life-History of the Brown Pelican," both illustrated by lantern slides. Dr. R. Blasius took "Die Pyrenäen und ihre Vogelwelt." The Rev. C. R. Jourdain was to have spoken on "Erythrism in Eggs," but time did not allow, so this subject came on at one of the subsequent meetings.

In the evening a conversazione was held at the Natural History Museum, the spacious entrance hall of which was handsomely decorated with flowers and palms. Members were received by Dr. Sharpe and Miss Sharpe. A very enjoyable time was spent chatting and wandering round amongst the collections.

On the morning of the 14th some 200 members went by train to Tring, at the invitation of the Hon. Walter Rothschild. We were met at the station and driven to the magnificent Museum, and had an all too short look round. From there we went to the Village Hall, where Mr. Rothschild lectured on "Extinct Birds," and exhibited a fine collection of extinct and vanishing species. Afterwards a move was made to the Home Farm, where a sumptuous lunch was provided. After being photographed, we split into three parties—one to go to the Reservoir, another to look round the grounds, and a third to spend the afternoon at the Museum. I went with the Reservoir party, and had an enjoyable time watching the various species of land birds and waterfowl. Some 17 species were identified, and the nests of three containing eggs found; also the young of several species were seen swimming with their parents. After tea at the Farm, the return journey was commenced, Euston Station being reached shortly after 8 p.m.

The next morning (15th) was a very busy time, more papers being set down than it was possible to get through. Consequently the balance had to be taken on Saturday. Those considered were by Dr. Louis Bureau, "Presentation d'un Atlas des Planches Coloriées de Brisson Attribué au Peintre Martinet"; by Mr. J. Lewis Bonhote, "Notes on Some Experiments in Hybridizing Ducks"; by Dr. Paul Leverkühn, "Les Correspondances Ornithologiques du Professor Fred Naumann"; and by Dr. E. Hartert, "The Principal Aims of Modern Ornithology."

In the afternoon a reception was held at the Mansion House, where members were received by the Lord Mayor and Lady Mayoress.

In the evening a dinner was given by the British Ornithologists' Union to foreign members of the Congress, at the Frascati Restaurant.

Saturday morning (15th) was uncomfortably crowded with business. Section I. took:—Graf Hans von Berlepsch, "Ein letztes Wort über die sogenannte '*Ruticilla cairii*'"; Dr. Louis Bureau, "La Perdrix Grise des Pyrenées (*Perdix perdix charrela*)"; and Mr. J. Dwight, "The Significance of Sequence in Moults and Plumage." Section II. took:—Mr. J. H. Fleming, "The Unusual Migration of Brünnich's Murre in Eastern North America," and Dr. F. Helm, "Neuere Beobachtungen über den Herbstzug des Staars in Deutschland." In Section IV. the following papers were taken:—Herr Otto Herman, "Reports on Investigation of the Food of Birds Since 1900"; Herr Igali Svetozar, "The Usefulness of and the Harm by the Sparrow to Agriculturists"; and M. Paul Martin, "La Grosseur des Grelaux Dangereux pour les Oiseaux." In Section V. (Aviculture), which should have met on Friday, Mr. D. Seth-



Smith read a splendid paper on "The Importance of Aviculture as an Aid to the Study of Ornithology."

In addition to the foregoing, two papers which should have been taken on Friday were read. They were:— Mr. W. S. Bruce, "Some Ornithological Results of the Scottish National Antarctic Expedition"; and, Dr. Edw. A. Wilson, "On Antarctic Birds."

At 2.30 p.m. the same day the final general meeting was held. Votes of thanks were passed to the various officers. After discussion, it was decided that the 1910 Congress be in Germany, and that Dr. Anton Reichenou be president-elect.

After a somewhat heated discussion, a motion was carried authorizing cablegrams being sent to the Governments of New Zealand and Tasmania, also to the Government of the Commonwealth of Australia, asking them to take steps to prevent the great destruction of Penguins that occurs on islands under their control.

On Monday (19th June) some 125 members were the guests for the day of His Grace the Duke of Bedford, K.G., at Woburn Abbey. We arrived at Ridgemont shortly after noon, and were driven to the Abbey, being met at the entrance to the grounds by Her Grace the Duchess. After lunch we wandered round the grounds and saw the magnificent collection of deer, antelopes, &c., also the extraordinary number and variety of waterfowl on the artificial lakes. It was a sight that will live long in the memory of those privileged to see it. The Duchess of Bedford accompanied the party all the afternoon, chatting and pointing out items of interest. All too soon the hour for returning came round, and we parted from our host and hostess after one of the most enjoyable afternoons it has been the lot of many of us to participate in.

Owing to a previous important engagement, I was, unfortunately, unable to take part in the remaining excursions, which were to Cambridge and Flamborough Head. I was afterwards told by some who went to both places that a most enjoyable time was spent.

The general opinion among the experienced members was that the Congress was one of, if not the, most successful yet held. The utmost good-fellowship was displayed among the members. All sectional meetings were well attended, and great attention paid to the various papers. Much solid, good work was done, work that must make its effects felt in ornithology.

Personally, I cannot speak too highly of the treatment I received, both in my official capacity and as an Australian.

#### OTHER PAPERS AND CONCLUDING BUSINESS.

Mr. A. G. Campbell read field notes on "The Moults of the Blue Wren (*Malurus*)."

The hon. secretary read a contribution by Mr. H. Stuart Dove (Tasmania) on "Diving Gannets," while Mr. A. H. E. Mattingley's somewhat lengthened and technical paper on "Principles Governing Movements in Cuckoos and Other Birds" was taken as read. These papers appear at length elsewhere in this issue of *The Emu*.

Mrs. H. L. Roberts (Tasmania) moved—"That the next session of the Union be held in Tasmania." Seconded by Mr. F. P. Godfrey, and unanimously carried.

A hearty vote of thanks was accorded to the Royal Society for the use of its room, to the University Board for the use of its theatre, to the Marine Board for assistance in connection with the proposed Kangaroo Island camp, and to Mr. J. W. Mellor for arranging the details in connection with the session, &c.

At the invitation of Sir Samuel Way the members of the Australasian Ornithologists' Union paid a visit to his charming residence, Montefiore, at North Adelaide, on Tuesday afternoon, the 24th October (the day the expedition returned from Kangaroo Island), and this proved a happy conclusion to the fifth congress of the Union. The guests were received by Sir Samuel and Lady Way, who accorded them a hearty welcome. The hosts, assisted by Miss S. Blue and Capt. Stewart, showed the naturalists over the well-kept and compact garden and grounds. Expressions of delight and admiration were freely given on seeing the birds so tame on the lawns and garden plots, where the Silver Gulls, Spoonbills, and Cranes seemed quite at home. In cages a large variety of native Cockatoos were observed, including the Bare-eyed, Rose-breasted, Long-billed, and Pink Cockatoos. A remarkably fine specimen of a large pure white Cockatoo from New Guinea was noted. In larger aviaries numbers of Parrots were observed, including the Rock Pebbler, Blue Bonnet, and others. In the spacious enclosures several varieties of Quail were quiet and at home, notably the Stubble and Painted varieties, the former having its nest and eggs in a secluded corner. The little Black-breasted Plover also breeds within the grounds, and those reared were seen. In another enclosure, set aside for their sole use, were several native and foreign Finches, some of most gorgeous plumage. These little birds were quite contented, and some were observed building and rearing their young. A pair of Laughing Jackasses was seen, also the useful Stone-Plover, which had bred in captivity. As some of those present were ardent botanists, much interest was taken in the large collection of native and foreign palms and shrubs with which the grounds are studded. The shade and glass-house plants proved interesting to many, as some of the flowers were of extreme rarity. The visitors were photographed in various parts of the gardens by a Melbourne member, after which they were entertained at afternoon tea. On behalf of the Union, the vice-president (Mr. J. W. Mellor) conveyed a hearty vote of thanks to the host and hostess for their kindness. Some of the visiting members were compelled, reluctantly, to leave the beauties of Montefiore early in order to catch the Melbourne express.

## CAMP-OUTING ON KANGAROO ISLAND.

At the termination of the session 22 members and friends\* enjoyed a profitable working camp-outing for 10 days (14th to 24th October), on Kangaroo Island. The expedition was conveyed to and from Port to the island by the steamer *Governor Musgrave* (Capt. P. Weir), through the courtesy of the Marine Board of South Australia (president, Mr. Arthur Searcy). The officers of the Marine Board, by every possible means in their power, did what they could to further the success of the expedition. Members were handsomely treated, as guests, not as passengers.

Kangaroo Island, which is about 80 miles long by about 30 miles broad, lies across the entrance of St. Vincent Gulf, South Australia, and, excepting perhaps Melville Island, in the north, is the largest island adjacent to the mainland of Australia.

Flinders discovered Kangaroo Island, landing near its eastern extremity on 22nd March, 1802. Here his party killed a number of kangaroos, which were welcomed as fresh food, after four months' privations. The explorer wrote:—"In gratitude for so seasonable a supply, I name this southern land Kangaroo Island."

Recently Kangaroo Island was brought prominently under notice through the deplorable wreck of the *Loch Vennachar* somewhere off the south coast. The island is of great interest to the naturalist, because it was formerly the home of a small dark-coloured Emu, now, unhappily, extinct. When the French expedition under Baudin explored Kangaroo Island in 1803, three Emus were captured and taken alive to Paris. A pair was sent to the residence of the Empress Josephine, and the third bird to the Jardin des Plantes. Two of the Emus lived for nearly 20 years. One was stuffed, and the other mounted as a skeleton. The remains of the third specimen unaccountably disappeared, but they were discovered in a singular manner years afterwards in the Zoological Museum, Florence. Possibly it was in the faint hopes of finding remains of the Black Emu and other "missing links" (insular localities have a peculiar fascination for the collecting naturalist) which induced the Union to fix its working camp-out this year in this locality.

On Saturday morning, 14th October, 1905, the party, under the leadership of Mr. J. W. Mellor, embarked at Henley Beach on the steamer *Governor Musgrave*. The run down the Gulf occupied the better part of the day, and it was not until after

\* The following are their names:—Mrs. A. J. Campbell, Miss E. Campbell, Miss A. Dethridge, Miss B. Mellor, Miss W. Mellor, Miss M. Ashby, Mr. J. W. Mellor (leader), Mr. J. F. Mellor, Mr. P. W. Mellor, Dr. Geo. Horne, Mr. A. G. Campbell, Mr. A. J. Campbell, Mr. A. Mattingley, Mr. J. A. Hill, Mr. F. P. Godfrey, Mr. E. Ashby, Mr. M. Symonds Clark, Mr. O. Crompton, Mr. R. Crompton, Mr. D. H. Martin, Mr. A. Caw, and Mr. A. G. Marchin (cook)

dusk that the steamer anchored in a snug cove on the north coast of Kangaroo Island, known as Middle River (Snelling's Beach), which had been selected as the site of the camp. It was moonlight, but it was not advisable to attempt landing until the morning, so Capt. Weir thoughtfully arranged for impromptu bunks on board, where the party rested after the somewhat discomfoting trip down. Three of the party, however, more impetuous than the rest, went ashore in the dinghy to prospect, and got wet in the surf for their pains. They disturbed from the adjacent rocks a Sooty Oyster-catcher, which went wheeling around in the night uttering its weird, piping whistle.

In the morning everyone was early astir. The first view of our hunting ground from the steamer's deck was very pleasing. The vessel lay between two rocky points half a mile apart. In the bight is a long half-circle of sandy beach backed by scrub-covered sand dunes; beyond are higher ridges, clothed in places with light gum forests, but in the main cleared and with a good mat of grass. The roof of a house could be seen just beyond the sandhills. A narrow stream enters the sea on the extreme left. Four boatloads of camp baggage were transferred from the ship, the rolling breakers inshore were negotiated, and all passengers and paraphernalia safely landed on the sandy beach. Then came the hard work of hauling the baggage inland, at which all worked with a will. Behind the sand dunes and nestling at the foot of the higher hills is an unoccupied house, kindly placed at the disposal of the expedition by Mr. B. H. Bell, sheep farmer. (Mr. Bell journeyed thither from another part of the island to meet the members. His advice, together with that of his friend, Mr. E. J. Clark, was often of great service to the expedition.) This was made the headquarters of the party. Tents were erected for the ladies (of whom there were six) in a grassy glade not far away. Two other tents were erected, one as an overflow for the house party and the other for museum purposes. Meals were served at a rough table in a lean-to beside the house.

Camp discipline was strictly observed, and *r veille* was sounded at six o'clock each morning by the cook, whose manipulation of the bugle showed him to be of some military training, and lent an air of briskness and importance to the camp. Breakfast call sounded at 7 a.m., lunch at 1, and dinner at 7 p.m.

The first impressions of this pleasant place, from an ornithologist's point of view, were that it was a land of Crimson Parakeets and brilliant Blue Wrens, from the numbers of these beautiful birds seen while the camp was being put in order. But other birds were soon discovered. A Black Magpie (*Strepera*) had its nest with young in a tree close by. A



Nest of Grey Thrush (*Collyrioides harmonica*) built in a demijohn wicker.

FROM A PHOTO BY E. A. DOMBLAIN



Young of Black-winged Crow-Shrike (*Strepera melanoptera*).

FROM A PHOTO BY A. MATTINGLEY



Graucalus had a nest not far from the house. Scarlet-breasted Robins trilled to brooding mates in sugar gums. Beside the ladies' tent Honey-eaters probed their bills into some introduced fuchsia plants, which had grown well nigh into trees for height. Seven paces behind another tent was found a Wren's nest containing tiny squabs.

Each day parties were organised for research in the surrounding country, and every evening specimens were shown and long discussions and note-comparings took place over the experiences of the day.

A favourite walk is along the valley of the Middle River. The introduced "Cape weed" flourishes among the spear-grass and melilot knee-high. On its flowers dozens of Crimson (Pennant) Parrakeets feed. As the birds rise to fly into a neighbouring tree their crimson bodies and blue-splashed wings always arrest attention. Some are so tame that they wait till we pass, then re-alight on the ground again. A few had commenced nesting in hollow trees. In some of their notes, especially the call, they remind us of Rosellas.

Entering a flat, several Spur-winged Plovers swoop down with complaining cries. No doubt young are hiding in the herbage, because we find bits of egg-shells on the swampy tract. The gullies that intersect the hills and run down to the river flat are full of flowering plants, flourishing under groves of eucalypts—veritable homes for small birds. A large Black-winged Crow-Shrike (Black Magpie) is brooding in its nest in the swaying bough of a sugar gum. In the scrub below is a nest with eggs of the white-whiskered New Holland Honey-eater, also a nest with young of its cousin, the Crescent Honey-eater, so named for the black horseshoe-shaped marking on the breast. Both nests were photographed *in situ*.

The photographers find plenty of natural history subjects among the birds, for most of them had young at this time.

The river for some distance is a clear, deep stream, 15 to 20 feet across. In the quiet reaches bream are exceedingly plentiful, and easily caught by hand lines baited with ordinary earth-worms. Evening angling parties invariably caught sufficient for breakfast, but the fish had a somewhat earthy flavour. At its mouth the river is much restricted by the shifting sand. It is narrowed down to a few feet, but the quantity of water behind is enough to push a rushing current through the barrier. In fact, the fight between the river and the sand has been a long one, and its history can be traced in the contour of the flat. Originally the river entered the sea on the western side of the little bay. The ladies' tents were pitched on the old river flat. But the persistent ocean sand, drifting in from the north-west, gradually pushed this mouth to the eastward, marking the conquest with a long line of sand dunes. Another closed mouth

is witnessed by a long blind arm of the river running into the rear of these sand hills. The real mouth, still fighting, is now pushed against the crags on the eastern point.

The country to the east of the river is markedly different from that on the western side, and this is first hinted at on seeing the section of the cliff face at the mouth. In the main the north coast of Kangaroo Island is formed of the tilted layers of metamorphosed rock, similar to those of the Mt. Lofty Ranges, South Australia. This rock weathers into a rugged and precipitous coastline, only here and there relieved by tiny sandy bays, such as that near which we were camped. At the Middle River mouth, however, these tilted layers are seen to be overlaid by irregular horizontal deposits of limestone, the record of some ancient sea when Kangaroo Island had a different shape to its present one.

This change in rock and soil gives a difference in vegetation and in scenery, and also in bird life, which is very striking. The first excursion was made in this direction. Ascending from the river flat by one of the numerous gullies, dense masses of Kangaroo Island acacia are met with. This is the prickly variety, so well known for hedges, and being interlaced with a dwarf spiny *Prostanthera*, a great deal of discomfort is experienced in pushing through. Then come belts of a flowering shrub (*Aster*), together with a number of sticky *Cryptandra*, growing among the lime concretions which lie thickly around. When the plateau is reached, at 200 feet above sea-level it is found to be a veritable native flower garden. Orchids and small plants of many kinds grow beneath heather-like shrubs knee high, which are in turn sheltered by brakes of dwarf *Casuarina*, Mallee eucalypts and Mallee scrub (*Acletoleuca uncinata*). Several botanists were in the party, who combine botany with the kindred study of ornithology, and they record over 150 species of flowering plants from this locality alone. The grass-tree (*Xanthorrhoea*), with seared black butts 3 to 6 feet in height, grows in belts. This tree is a denizen of the poorer parts, and prefers ironstone gravelly tracts. The ironstone gravel occurring in places among the limestone points to the presence of underground hills, so to speak, of slaty rock (similar to that seen to the westward across Middle River valley), which rise to the level of the limestone moorland. The grass-trees' globular heads of grass-like leaves are very picturesque, and when the tall flower-spike is thrown up from the centre some 6 feet or more the honey-eating birds and insects are well supplied with food. The "yacca," as the grass-tree is often called, exudes from the lower portion of its trunk a rust-coloured resinous gum, which is valuable in varnish making. When a fire has been over them they furnish a sort of resin, which is sometimes used in the preparation of "brown hand varnish," and is almost as good a colouring matter as the



“dragon’s blood” from the dracæna of Teneriffe and the Canary Isles.

The birds found about this upland heathy country are not many either in number or in species, a variety of the little Brown Acanthiza, Rufous-rumped Ground-Wren, Wattle-checked, Fulvous-fronted, and New Holland Honey-eaters, and Striated Pardalote being the principal ones. Ants are common, and some enormous mounds, quite 10 feet across and 3 feet high, are to be seen among the heather. On many of them are old and recent excavations of spiny ant-eaters or echidna, many of which are met with.

Some of our party made an intrepid excursion further along this coast to an Osprey aërie, built upon an outstanding rock some 33 feet in height. It was reached at low tide, and two eggs were photographed in the nest. The Sooty Oyster-catcher and the Reef Heron were nesting upon the same rock.

Another day a trip was taken to Stokes Bay, six miles further in the same direction, but no change was reported in the nature of the country.

This whole tract may be briefly described as a heath-covered plateau, 200 feet above sea-level, slightly undulating, and with no surface water. There are no gum-trees (excepting stunted mallee), and but few grass-trees.

Contrasted in many ways is the country to the westward of Middle River. The bedrock there is entirely of the slaty nature seen in section along the coast, and it is carved into deep valleys and stony hillsides. No flat or undulating land is to be found, except in the valleys. The hills rise sharply from the coast line until they reach 450 feet above sea level, and are clothed throughout with timber. This is the home of the well-known sugar gum (*Eucalyptus corynocalyx*). Forests of it occur within three miles of the coast, but it is not found any further inland, unless it creeps up some suitable valley. The tree has a habit of branching near the ground, and dividing up into a number of small branches; its value for timber is thereby affected, but doubtless this is its most suitable form in the poor, stony areas it frequents. The timber is of excellent quality for mining purposes, though the trees seldom grow more than 2 feet in diameter. The sugar gum forest does not allow of much else growing with it. There is very little under-scrub, the forest floor for the most part consisting of pieces of slate and quartz strewn with leaves and twigs. Very fine effect, however, is given by glades of grass-trees, which are found in parts beneath the gums. Possibly this is a different variety of *Xanthorrhiza* to that growing upon the open moorland.

But this particular class of country is only the coastal strip. That the same rock has different scenery, when away from the influence of the salt breeze, we discovered on some subsequent

excursions. It is always noticed that the vegetation of the sea-board differs from that of the interior. In the limestone area plants were found on the cliff faces which did not occur 400 yards inland. On the sand dunes near the river mouth species were observed that belonged strictly to the littoral. So here, sugar gums on the ridges and hillsides, with a species of broad-leaved acacia (*A. dodoncifolia*) in the richer pockets, characterised the seaward slopes of these slaty hills. But there are other influences at work. The gradual change was noticed on the trip to Western River.

This trip occupied a whole day, for this river, the next in importance on the north coast after the Middle River, is some nine miles distant. The track, presumably to escape rugged country, makes a detour inland, and between two and three miles from camp the sugar gums give place to stringybarks (*Eucalyptus capitellata*). These are poorer and less thick in comparison, so there is an abundance of under-scrub. Dwarf *Casuarina*, *Hakka*, *Banksia*, matted together in parts with the native dodder vine (*Cassytha*), shelter many varieties of smaller plants, among which are several like those observed in the open area east of Middle River, notably *Boronia*, with its pink flowers, and the curious *Isopogen*. New genera, however, appeared in the yellow-cupped *Hibbertias*, the bright pink *Tetralthea*, and brown and gold pea flowers (*Pultenca* and *Dillwynia*). Grass-trees flourish on the poorer hilltops. The track leads up and down, mostly along stony ridges, but occasionally into a deep valley, with a running creek embowered in the rough weeping grass (*Cladium*) and the taller scrub so common in such places. But sugar gums again appear as the coast is approached, and after passing through fine belts of several miles in length, an abrupt descent is made to the valley of the Western River. The party was welcomed by Mrs. Sheridan, and rested before making the return journey.

The river flats, though restricted in area, appear very rich, and even the stony hillsides, when cleared, carry a fine pasture. The summer must indeed be humid. It was interesting to see here several beautiful flowering plants which were not discovered on the Middle River (*Helichrysum lucidum*, *Solanum simile*, and *Lavatera plebeia*). It is difficult to account for their restricted habitat. We were shown a fine piece of precious tourmaline picked up in the river bed. Profitable deposits of this gem stone may some day be found. Mrs. Sheridan has a Magpie in captivity, got on the island, which has a distinct black band on its back, but this was the only bird observed with that character. We were able to photograph a sugar gum where a Leach Cockatoo (*Calyptorhynchus viridis*) had nested last autumn, and discovered that it was now occupied by a Boobook Owl. The Western River cove is very similar to, but much smaller than, that of Middle River.

From Western River three of the party who had decided on making an extended exploring trip set off inland, while the remainder returned to camp.

On another fine day a party proceeded to examine falls which were reported to be on Middle River, three miles distant across rough country. Ascending a steep hill (500 feet high) at the rear of our quarters, we get on a ridge whence a good outlook is obtained. Southwards appears what is locally known as "yacca" country, where grass-trees (called "blackboys" in Western Australia) grow. These are exceedingly ornamental features in the landscape, the long thatch-like leaves either fringing or drooping gracefully about the stems. A quartet of Wedge-tailed Eagles (or Eagle-Hawks) soaring near in circles are hawking for prey. They are, apparently, fearless of our presence, because one alights on a low tree not far distant, and flaps his great pinions, while uttering whistling calls, as if glad to see us. We follow the ridge eastward for some distance, then, crossing a tributary (White Tree Creek), descend into the river valley. Delightful is the solitude. The trees are clean-stemmed (no trace of forest fires), the herbage is soft and yielding, and the clear stream is seen between verdant banks margined with rushes. On the creek's bosom aquatic plants are oscillating with the current, which bears away the floating blossoms shed from the eucalypts above.

To avoid the rocky banks we ascend a ridge, where we disturb a White Cockatoo from its nest in a hollow tree-trunk. We are now in very stiff scrub, which makes travelling difficult, for the ladies more particularly. Nevertheless, the scrub brings pleasures to the botanists, who are in ecstasies, gathering species strange to them. A prickly *Hakea* in full bloom is filling the air with delicate aroma. Some of the rocky ridges sustain fine examples of the common heath (*Epacris*), with exceedingly large and loose red bells, and a creeping *Grevillea* bearing flowers of flaming scarlet. By midday, or in about three hours from camp, the sound of rushing waters reaches our ears. As we are scrambling down a steep and slippery decline beautiful waterfalls in a fairly open locality confront us. The falls, which are in the form of a cascade, come tumbling down about 110 feet over tilted outcrops or ledges of hard rock. Amid such romantic surroundings we boil the billy (probably the first ever boiled here), and camp on a lichen-covered rock.

The three explorers who left us at Western River three days ago turn up unexpectedly, and are received with shouts of welcome. They were a bit travel-stained, and glad to find us. They reported that after they had left Western River they found the country inland rising gradually, till the aneroid stood at about 700 feet. Four miles from the coast stringy-bark took

the place of sugar gums. The stringybark ran in belts, capping the ridges, where ironstone gravel was in evidence. Throughout was never-ending under-scrub of dwarf *Casuarina*, *Banksia*, and heather-like plants, among which bright-eyed *Boronia*, *Tetratheca*, *Grevillea*, and *Styphelia* were in flower.

After five hours' tramping and crossing three small tributaries of the Western River, the telegraph line, which runs from Kingscote on the east to Borda Lighthouse on the western point of the island, was reached. A little further on a camp was made beside the head waters of one of the branches of the Middle River. Under the shelter of a temporary mia-mia of boughs the party slept near the source of the home river.

Next day the central plateau was explored. There are two lagoons, of considerable size but of no great depth, occupying the centre of a great area of marshy ground. At this time of the year, after the rains of winter, they had overflowed into the surrounding scrub in all directions. The average limits of the water are probably marked by belts of white gums (*Eucalyptus cosmophylla*) growing amongst tall tea-tree (*Melaleuca*) scrub.

Here was a different type of country from that previously seen. A few waterfowl sported on the lake, and the Grass-Bird (*Megalurus gramineus*) was heard piping in the reeds. A pair of Ground-Thrushes (*Geocichla*) was feeding full-grown young, and Brush Wattle-Birds (*Acanthochuca mellicora*) were evidently nesting also. A Thickhead (*Pachycephala gutturalis*, var.) and *Pardalotus xanthopygius* were heard, and a pair of Fire-tailed Finches (*Zoneginthus bellus*) was seen.

Apparently many streams have their sources thereabouts. Some go south, some north, and one—the Cygnet River, the longest on the island—flows eastward. This stream was followed down some distance, and the second night was spent comfortably in a tin hut, which has evidently been erected for the use of telegraph line repairers. All the country fringing the centre marshes will prove of some agricultural value. The soil is a deep friable clay, sufficiently well watered to ensure its carrying almost any kind of crops. But at present it is quite untouched, though a skeleton of a fence near the lagoons showed that some steps had been taken in this direction. A solitary trapper was met in the scrub here. He was of grotesque figure, dressed apparently in all his wardrobe—two suits of old clothes, with thigh leggings to protect him from the rough scrub. He spoke with a German accent, and, although leading a lonely life, appeared satisfied with his prospect of a good take of wallaby and opossum skins.

The Cygnet River, only four miles from its source, is a strong stream of 10 feet in width, flowing through a mass of tea-tree and other scrub, and occasionally passing through a belt of white gums, which marks the spot where a tributary soak

emerges from the low hillside. Many of these gums were bearing trusses of large flowers, a great attraction to the New Holland and Crescent Honey-eaters and the Blue-bellied Lorikeets. Several Little Lorikeets were observed in one place also. A family of Black Cockatoos (*Calyptorhynchus xanthonotus*) was disturbed feeding on the hard fruits of *Hakea* bushes, and several more beautiful yellow-breasted Thickheads were seen.

After following the Cygnet River thus far, a course was struck due north for the purpose of picking up the Middle River and tracing it down to the camp. Three tributaries, flowing east into the Cygnet, were crossed. The quantity of water is indeed surprising. Quite small depressions hold large creeks that cannot be stepped across in many places. The water, it was everywhere remarked, was singularly clear. The nature of the country is such that there is very little surface waste of fine sediment.

Apart from the valleys, the vegetation is mainly stringybark, with the tough under-scrub of *Casuarina*, *Banksia*, *Hakea*, *Styphelia*, and *Tetratheca*. Two new species of *Grevillea* were collected that had not been previously seen. The timber improves in size where the ground is naturally richer, and the smaller shrubs are correspondingly strong. The thickest timber met with during the journey was in this area, and the floor of some of these valleys was well nigh impenetrable. It was with thankful hearts that the Middle River was struck, and the jungle left behind for awhile. But the scrub was still thick along the river valley. The easiest travelling was soon found along the adjoining ridge. The birds noted in this part were White-eared and Crescent Honey-eaters in the valleys, and Tawny-crowned Honey-eater, *Melithreptus magnirostris*, Scarlet-breasted Robin, var., and Brown Tit, var., in the stringybarks.

The valley gradually becomes deeper and more tortuous as the seaboard is approached until it is positively precipitous, the river being split up in innumerable fashions by tumbled masses of rock and soil with trees and herbage growing thereon. The steepest part of this gorge finishes in the picturesque cascades already mentioned, where the main party was met with. The re-united parties returned to camp towards evening. From the last ridge above the camp a beautiful view was obtained of the mainland across the straits. The setting sun threw the Althorpe Islands, with their remarkably-shaped sentinel, Wedge Island, into bold relief on the horizon.

Another party started two days previous to this for Cape Borda, some 40 miles from camp. They followed the coastal track *via* Western River, Snug Cove River, and De Mole River, and reached their destination on the second day. They reported very little change in the configuration of the country passed through, except that it became more picturesque and heavily

timbered in favoured parts. They thoroughly enjoyed themselves fishing, sealing, and wild goat stalking, and arrived in camp on the evening of their fourth day out very well pleased with their trip. They spoke very highly of the kindness of the lighthouse-keepers at Cape Borda and of Messrs. Sheridan and Hirst *en route*, the latter of whom generously gave them a horse to carry home their various trophies, which included a live wallaby and three live Penguins.

The last two days were spent by all the party in traversing once more the lower reaches of the Middle River and the tableland and ridges on either hand. On this last visit the river valley seemed more than ever filled with birds. Hundreds of Blue-bellied Lorikeets were screaming and feeding on the flowering "blue gum" trees (*Eucalyptus leucoxydon*) that stood in one of the swampy backwaters. Beneath them a Black Duck enticed her young out of harm's way, and near by a White Cockatoo flew off screeching. A party of Black-winged Crow-Shrikes and several Fire-tailed Finches were observed, while Spinebill, Crescent Honey-eater, *Melithreptus magnirostris*, Scarlet-breasted Robin, var., Striated Tit, and Brown Tit, var., were much in evidence. A solitary Stone-Plover was disturbed from its mid-day rest. By the river side and on the flats were several plants not elsewhere seen, one an iris (*Sisyrinchium*) with sky-blue flowers, and a broad-leaf tea-tree (*Melaleuca*) just breaking into pink blossom. Orchids were very plentiful, and grew to some size. Thirty-six species were identified, principal among them being *Thelymitra antennifera* and *flexuosa*, *Prasophyllum elatum*, *Diuris longifolia*, *Caladenia carnea*, *latifolia*, and *menziesii*, and *Pterostylis barbata*. In all 225 species of plants in flower were identified, and among them are several that have not been previously recorded for the Kangaroo Island—*Ranunculus lappaceus*, *Drosera peltata*, *Loronia pinnata*, *Rhagodia billardieri*, *Dillwynia hispida*, *Myriophyllum verrucosum*, *Cynglossum australe*, *Hypoxis glabella*, *Caesia vittata*, *Cyperus lucidus*, *Scirpus nodosus*, and *Lepidosperma concavum*.

It might be rash to forecast the future of Kangaroo Island, but there is no doubt that it is a wonderful heritage awaiting development. It lies asleep until the population arises to exploit it. That it is well watered throughout cannot be doubted on examining the plan so carefully prepared by the Lands Department of South Australia. Streams are in abundance, and, blessed with a genial climate and soil of no mean potentialities, the island must have a promising future. The first step towards advertisement will be taken when it is made a watering place and a sanatorium for South Australia.

[NOTE.—On the return trip from Adelaide to Melbourne three of the Melbourne members, through the kindness of Dr. T.

Ryan, of Nhill (Victoria), spent two days in the Mallee fringe, where an interesting lot of birds were observed. The notes obtained will form the subject of a short paper in some future issue.]

## Report on the Birds of Kangaroo Island: a Comparison with Mainland Forms.

BY A. G. CAMPBELL, MELBOURNE.

It is difficult to believe that all forms of life have been evolved by the influence of differing conditions, though it seems obvious that numbers of species have had a common ancestor. In a general way there are influences creeping in which there are now no means of gauging, so far back are their beginnings, but it is most interesting to search out connections between allied forms of the present day.

One form in one locality is only worthy of being made a species separate and distinct from another form in another locality if its points are fairly constant. The characters of each must not grade toward and merge into one another, or they must be considered one and the same species.

Slight differences must be expected if the theory of origin by adaptation to environment holds good. For slight differences will in time become the more marked ones that differentiate species.

Where geological change has occurred and where a sea or a desert has crept in and divided two parts of a similar area, differences at first slight would become more and more distinct. Ultimately a species on one hand would be found with no connecting links to one on the other. This is still more marked if the break occurs on an east or west line, and if one section be forced to a more southern habitat than the other.

South-eastern Australia has its own quota of bird life. In Western Australia there are many species the relation of which to forms in the south-east can be distinctly seen. But they in most instances show some constant difference that makes them worthy of another specific name. Midway—that is, in South Australia—there might be expected some intermediate differences. But as these cannot be traced sufficiently it was with great interest that Kangaroo Island was searched. The results were not disappointing, for many forms distinctly worthy of being termed links between eastern and western species were discovered. This island has been locked up, so to speak, for many years, and was found to contain a good record of conditions that on the mainland have long since been interchanged away. It is interesting to record, too, that the affinity of Kangaroo Island birds is with those of Victoria, and not with those of South Australia, as might be expected.

For comparison the Passerine or perching birds can be examined, sea birds and other roving species being out of the question.

The results of these observations summarized are that Kangaroo Island supplies a link between the following respective species from South-eastern and Western Australia, namely :—*Petræca leggii* and *P. campbelli*, *Acanthiza pusilla* and *A. apicalis*, *Pachycephala gutturalis* and *P. occidentalis*, *Zosterops cerulescens* and *Z. gouldii*, *Meliornis novæ-hollandiæ* and *M. longirostris*, *Melithreptus brevirostris* (possibly) and *M. leucogyns*.

The affinity of the Island avifauna with that of South-eastern Australia (particularly Victoria) is shown by the inclusion of the five genera—*Geocichla*, *Megalurus*, *Meliornis*, *Zoneginthus*, and *Egintha*, together with the abundance of the Honey-eater *Ptilotis leucotis*, and the Parrakeet *Platycercus elegans*. These are found very commonly on Kangaroo Island, but are not at all common in South Australia.

Another feature of the Kangaroo Island list is the absence of Tree-creepers (*Climacteris*) and Tree-runners (*Sittella*). This, if substantiated, is remarkable, seeing that these birds are looked upon as the universal protectors of forests against timber-boring insects. The Flower-pecker (*Dicaeum*) is not included. As in Tasmania so in Kangaroo Island there are no parasitical mistletoes (*Loranthus*), and this bird, the only known distributing agent, is not found in either locality.

Concerning the nomenclature for these intermediate or island forms, it is difficult to prescribe. I would suggest that the specific name *halmaturina* (meaning inhabiting Kangaroo Island—*Halmaturus* being the generic name for the wallabies or small kangaroos) be applied to *Acanthiza pusilla*, *Pachycephala gutturalis*, *Acanthorhynchus tenuirostris*, *Zosterops cerulescens*, and *Meliornis* (*Lichmera*) *australasiana*; and should subsequent research and more material warrant it, that the same name be also sub-specifically applied to *Collyriocincla harmonica*, *Petræca leggii*, *Geocichla lunulata*, and *Meliornis novæ-hollandiæ*.

The following is a complete list of (70 odd) species of birds that were noted by the members of the Aust. O.U. expedition:—

UROÆTUS AUDAX (Wedge-tailed Eagle).—A fine gorge on the Middle River, some five miles inland, was the home of a pair of these birds. Others were seen.

HALIÆTUS LEUCOGASTER (White-bellied Sea-Eagle).

FALCO LUNULATUS (Little Falcon).

CERCHNEIS CENCHROIDES (Kestrel).

PANDION LEUCOCEPHALUS (Osprey).—An aerie was visited, built upon a prominent outlying rock some 30 feet in height.







Black-winged Crow-Shrikes (*Strepera melanoptera*).

FROM A PHOTO. BY A. MATTINGLEY.

NINON BOOBOOK (Boobook Owl).

CORONE AUSTRALIS (Raven).

STREPERA MELANOPTERA (Black-winged Crow-Shrike).—Many of this species were nesting in the sugar gum forests that exist within three miles of the coast, and a few pairs also were noted inland in the stringybark gums near the river courses. All had young in varying stages. One pair near our camp was photographed feeding their young at the nest. A very cold night killed these nestlings, when the parents immediately turned their attention to another young bird brought in by one of the party. They fed it regularly within a short distance of our quarters. The nestling has the primaries and particularly the secondary feathers of the wing tipped white, but the adult has the whole wing entirely black. See Plate XIII.

COLLYRIOCINCLA HARMONICA (Grey Shrike-Thrush).—One specimen obtained proves to have a much darker under surface than the mainland specimens, and no light throat or eyebrows. The light colour is confined to a loreal spot only.

GRAUCALUS MELANOPS (Black-faced Cuckoo-Shrike).—A pair found nesting in a sugar gum near our camp.

PETRECA LEGGII (? variety) (Scarlet-breasted Robin).—There is an interesting link between eastern and western forms. The Island bird has the breast colour of the eastern with the small cap of the western, thus combining the two. In most measurements, however, it is smallest.

	Length.	Bill.	Wing.	Tail.	Tarsus.	Dia. of Cap.
<i>P. leggii</i> , Vic. ...	5.3	.35	3.1	2.2	.75	.4
<i>P. leggii</i> , var. Kang. Id. ...	4.6	.4	2.85	2.0	.78	.3
<i>P. campbelli</i> , W.A. ...	5.0	.35	3.0	2.2	.8	.3

MALURUS CYANEUS (Blue Wren).—A single specimen obtained has an exceptionally long tarsus .9 in.—and the wing coverts and primaries are a very deep Prussian blue colour. Blue Wrens were numerous.

RHIPIDURA ALBISCAPA (White-shafted Fantail).—This specimen has a very large and white ear-mark, the breast is darker, and the few white spots on the shoulder of the wing appear to link *R. albiscapa*, which is prominently spotted, with *R. diemenensis*, which is but seldom marked. This indicates that there is less difference between the two than warrants the latter being made a separate species.

SISURA INQUIETA (Restless Flycatcher).—Compare :

	Length.	Bill.	Wing.	Tail.	Tarsus.
<i>S. inquieto</i> , Vic. ...	7.7	.6	4.15	3.75	.65
<i>S. inquieto</i> , Kang. Id. ...	7.0	.7	4.2	3.6	.8
<i>S. naut</i> , N.W. Aust. ...	6.0	.75	3.4	3.0	.75

GEOCICHLA LUNULATA (? variety) (Ground-Thrush). A single specimen procured was youthful, and has a short bill. Two other birds were noticed that had just left the nest, were being fed by their parents, and had a curious circlet of down still about the head.

This, however, approximates to the Tasmanian species, *G. macrorhyncha*, on account of its darker plumage. Both insular forms have the black crescent edging to the feathers of the upper surface broadest on the crown, while in *G. lunulata* the markings are narrowest in that part. About the breast, also, the crescent marks of the under parts become broader and form a thick dark patch.

MEGALURUS GRAMINEUS (Grass-Bird).—This was heard on the inland lagoons.

ACANTHIZA HALMATAURINA (new species) (Dusky Tit).—There is a

constant difference between the island form and that of the mainland. The mantle is blackish, and not brownish-olive. The legs are black, and not brownish-black. The throat markings are heavier, while the forehead feathers at their bases are fawn-coloured, and not rufous. Indeed, though it lacks the white tips to the tail feathers, this island form approaches nearer *A. apicalis* of Western Australia than it does to *A. pusilla* of Victoria. Its measurements are:—Length, 3.9 in.; bill, .31 in. (two specimens were .4 in.); wing, 1.9 in.; tail, 1.6 in.; tarsus, .8 in. It inhabits the thick scrub upon the island, and does not venture into the gum-tree tops. One nest was discovered upon the heath lands, placed in a small bush about 1 foot high.

*ACANTHIZA LINEATA* (Striated Tit).—There is no difference between specimens from the island and those from the mainland. The little voices of this species were always heard among the glossy foliage of the sugar gum-trees, and were also noted in white gum timber inland.

*SERICORNIS MACULATA* (Spotted Scrub-Wren).—This possesses a very large bill (.51 in.), but otherwise shows no differences. The young are dressed in a browner mantle than the adult. The sides especially are rufous-brown, and the eyebrow, throat, and tail markings are very indistinct.

*HYLACOLA CAUTA* (Rufous-rumped Ground-Wren).—On all the uplands the thick shrubby vegetation gave cover to numerous pairs of this bird. Many had full-grown young, while two dome-shaped nests, rather small in proportion to the bird, were found ready for eggs. The male bird is a pretty songster, and always attracts notice by his strong-throated warbling. The female is less brightly marked, and the young is distinguished by a light fawn-coloured throat and chest, though it has the dark-centred feathers of the older birds.

*EPHTHIANURA ALBIFRONS* (White-fronted Chat).

*GYMNORHINA LEUCONOTA* (White-backed Magpie).—This was common along the coastal clearings. One specimen (in captivity) had a narrow black band across the back.

*EOPSALTRIA* (sp.).—A whistle of a Yellow-breasted Shrike-Robin was noted, but the species was not determined.

*PACHYCEPHALA GUTTURALIS* (White-throated Thickhead).—Several were seen inland in thick scrub by the creeks. On comparison with specimens from Western Australia, it proves to have a much darker yellow breast—as bright, in fact, as *P. gutturalis* of Southern Victoria. The quantity of black on the tail is made a distinguishing feature between the eastern and western forms, but the island specimen comes between. *P. occidentalis* has .75 inch (the tip) black, *P. gutturalis* 1.8 inch (two-thirds), and the specimen under notice 1.1 inch (one-half). This may be *P. intermedia* (North), but the reference has not been compared.

*ACANTHORYNCHUS HALMATURINA* (new sub-species) (Pale-coloured Spinebill).—This presents some variations worthy of note. Compared with the mainland form the tail has less white tip—.75 inch against 1.0—and the abdomen and throat are both much lighter in colour. The crown and collar are also much lighter—the latter, in fact, of a male specimen being as light as in a female of the mainland, which, of course, is always the lighter and smaller of the sexes. The colour of the abdomen of this new species is ochreous-buff, not rufous-brown.

The measurements are interesting:—

	Length.	Bill.	Wing.	Tail.	Tarsus.
Victoria ... ..	5.75	.9	2.75	2.5	.7
Kangaroo Island ...	5.3	.88	2.6	2.3	.74
Tasmania ... ..	5.2	.8	2.5	2.25	.75

The Tasmanian form, which was named by Gould *A. dubius*, is of all the darkest in plumage. The Kangaroo Island form, by its lighter colour and duller markings, has differentiated from the parent stock in a different fashion.

*ZOSTEROPS HALMATURINA* (new sub-species) (Island White-eye).—Here, too, is an interesting link. *Z. carulescens*, of South-eastern Australia, is characterized by its grey back, chestnut flanks, and greyish throat (sometimes tinged with greenish-yellow); *Z. gouldii*, of Western Australia, by its green back, greyish flanks, and yellow throat. The Kangaroo Island bird has grey back, greyish flanks, and yellow upper throat, thus linking one with another. The legs are of a very light horn colour, and not grey-black; the bill is heavier—.4 in. against .33 in.; wing is 2.25 in.; tarsus, .7 in. Without it is quite a distinct variety.

*MELITHREPTUS MAGNIROSTRIS*.—This bird inhabits the sugar gums and the stringybark. It has been separated from *M. brevirostris* as a new species by Mr. A. J. North. It has a large bill (.57 in.), but *M. brevirostris* reaches .5 in. The colour of bill is black, while *M. brevirostris* is brownish-black. Specimens from Nhill, in North-western Victoria, are, however, jet black, like the Island form. As with all *Melithrepti*, the bill of the female sex is always smaller by about .05 in. There is a traceable dark band below the light collar which does not exist in the mainland birds, and the crown, ear coverts, back, and under tail coverts are all slightly darker. In life a bluish spot exists in the centre of the bare lower eyelid. This has not been noted in *M. brevirostris*, though it occurs with *M. leucogenys* of Western Australia.

*GLYCIPHILA FULVIFRONS* (Tawny-crowned Honey-eater).—On all the heath-covered tracts this bird is to be found. One nest was discovered containing four eggs, which, judging by the two types, were evidently laid by different birds. One bird procured showed slight variation from the mainland form. Only the back half of the crown was tawny in colour, the forehead being creamy-white, like the eyebrow.

*PTILOTIS LEUCOTIS* (White-eared Honey-eater).—This was found only in thick scrub near the river, from which it loved to ascend the gum-tree butts in search of food. It has a bill larger by .13 in. than the mainland bird, and is of a slightly darker tone.

*PTILOTIS CRATITIA* (Wattle-checked Honey-eater).—This beautiful bird is the only other representative of its large genus. It inhabits the scrub-covered moorlands not far from the sea, and the brush-like tea-tree that grows on the river flats. But in comparison with specimens from Nhill, Victoria, it is found of darker plumage, and the wings and tail are blackish instead of brownish. The bill, wing, and tarsus are all slightly larger. The male bird is distinguished by a blackish collar on the hind-neck and a darker crown.

*LICHMERA HALMATURINA* (new sub-species) (Lesser Crescent Honey-eater).—This was an unexpected bird upon the island, where it was common in the scrub along the river. It possesses a bill .15 larger than the Victorian specimens, and is of duller plumage. The striking wing-patch and also the colour on the tail is greenish-yellow, and not bright yellow. There is less white on the tail (.75 in. against .9 in.), no white centre to the chest, and the upper throat is but faintly streaked. The young bird has a short bill, but the sexes can be distinguished by the male, even in the browner youthful plumage, having a prominent greenish-yellow wing-patch. The female is throughout darker than the mainland female. Measurements are as follow :

	Length.	Bill.	Wing.	Tail.	Tarsus.
<i>L. australasiana</i> , male	... 6.3	.6	3.05	2.75	.7
,, female	... 5.7	.58	2.62	2.35	.7

	Length.	Bill.	Wing.	Tail.	Tarsus.
<i>L. halmaturina</i> , male ...	... 5.7	.75	2.8	2.5	.8
"    female ...	... 5.3	.72	2.62	2.2	.8

MELIORNIS NOVÆ-HOLLANDIÆ (? variety) (New Holland Honey-eater).—This showy bird was plentiful in all the scrubby country, and could often be seen perched on the flower-stalk of some grass-tree extracting nectar from the upright column. Comparing it with specimens from Victoria showed it to be little different in plumage, excepting that the chest striations were jet black, like the head. But from its longer and stronger bill it brings the Western Australian *M. longirostris* very close to its eastern congener. The bill of the former measures .78 to .8 in., of the latter .7 to .72 in., and of Kangaroo Island specimens .75 to .78 in.

ACANTHOCHERA CARUNCULATA (Red Wattle-Bird).—One specimen examined has a bill 1.2 in. long, wing 6.4 in., both of which are larger than the mainland form, while it is without the prominent silky-white patch under the eye.

ACANTHOCHERA MELLIVORA (Brush Wattle-Bird).—This was observed nesting about the quiet central lagoons only.

PARDALOTUS ORNATUS (Striated Pardalote).—On the scrub-covered moorlands a few very stunted gum-trees were found, some of them not more than 6 feet in height. They were covered with grotesque galls and insect ridden. In nearly every patch one of these little birds could be disturbed. It differs somewhat from Victorian specimens in markings. Those from the north-east of the State are much richer than those from the north-west. They have the lower back and rump rufous instead of olive, and, further, have the tips of all the primaries white. The Kangaroo Island specimens have one character of each. They are olive-coloured in the mantle, like the birds from north-west Victoria, but have all the tips of the primaries white, like the north-eastern forms.

PARDALOTUS XANTHOPYGIUS (Yellow-rumped Pardalote).—One bird was seen inland.

HIRUNDO NEOXENA (Swallow).

PETROCHELIDON NIGRICANS (Tree-Martin).

ANTHUS AUSTRALIS (Pipit).

ARTAMUS SORDIDUS (Wood-Swallow).—This bird was found through most parts of the island. Seeing it is supposed to be migratory, it should not differ much from specimens from other parts: but it does differ in being of a darker tone, and in having very little white on the tail tip.

ZONÆGINTHUS BELLUS (Fire-tailed Finch).—Of all species noted this was, perhaps, the one least expected. Several pairs were seen, both among the white gums flanking the inland lagoons and among the sugar gums on the river flat near its mouth. In company with *Ægintha temporalis* it was nesting in the under-scrub. A specimen procured, in comparison with one from Victoria, shows the upper surface not olive, but grey, like the under surface. The length of wing is 2.3 in. (longer than the other specimen referred to by .15 in.)

ÆGINTHA TEMPORALIS (Red-browed Finch).—These were found, too, in the thick brakes of bracken fern on the river flats.

HALCYON SANCTUS (Sacred Kingfisher).

CACOMANTIS FLABELLIFORMIS (Fan-tailed Cuckoo).

CHALCOCOCCYX BASALIS (Narrow-billed Bronze-Cuckoo).

TRICHOGLOSSUS NOVÆ-HOLLANDIÆ (Blue-bellied Lorikeet).—Among the blossoms of the "blue gums" (locally so called) on the river flats hundreds of these birds were feeding. The flowering eucalypts could

always be located from some distance by the chattering, whistling, and screeching noises of the Keets.

*GLOSSOPSITTACUS PUSILLUS* (Little Lorikeet).—A small party of this species was observed inland on some flowering white gums.

*CALYPTORHYNCHUS XANTHONOTUS* (Black Cockatoo). These were in flocks of 20 to 50 some distance back from the coast, feeding upon the black-winged seeds of *Haakea* bushes, the strong pods of which they have no difficulty in cracking. This species in life is very handsome. There is a delicate pink-coloured naked membrane encircling the eyelids, which greatly enhances its appearance. Salvadori, in "Genera Avium," gives 13 to 14 inches as typical wing measurements of this species, and 15 to 16 in. for *C. juvencus*. Two specimens from Kangaroo Island measure 15 in. and 15.5 in.

*CALYPTORHYNCHUS VIRIDIS* (Leach Cockatoo).

*CACATUA GALERITA* (White Cockatoo).—Nesting.

*PLATYCERCUS ELEGANS* (Crimson Parrakeet).—The commonest birds about our camp were of this species. Mature birds in their brilliant livery fed unheeding among the grasses.

*PLATYCERCUS EXIMIUS* (Rosella).—One specimen was reported towards Cape Borda.

*PHAPS CHALCOPTEA* (Bronze-wing Pigeon).

*TURNIX VARIA* (Painted Quail).—Nesting.

*MICROTRIBONIX VENTRALIS* (Black-tailed Native-Hen).

*GALLINULA TENEBROSA* (Black Moor-Hen).

*PORPHYRIO MELANONOTUS* (Bald-Coot).

*FULICA AUSTRALIS* (Coot).

*BURHINUS GRALLARIUS* (Stone-Plover).

*HEMATOPUS UNICOLOR* (Sooty Oyster-catcher).

*LOBIVANELLUS LOBATUS* (Spur-winged Plover).

*ÆGIALITIS CUCULLATA* (Hooded Dotterel).

*STERNA BERGII* (Crested Tern).

*GABIANUS PACIFICUS* (Pacific Gull).

*LARUS NOVE-HOLLANDIÆ* (Silver Gull).

*DEMIGRETTA SACRA* (Reef-Heron). Breeding.

*PHALACROCORAX CARBO* (Black Cormorant).

*PHALACROCORAX HYPOLEUCUS* (Pied Cormorant).

*SULA SERRATOR* (Gannet).

*EUDYPTULA UNDA* (Little Penguin).

*ANAS SUPERCILIOSA* (Black Duck).

## Principles Governing Movement in Cuckoos and Migration in Birds.

BY A. H. E. MATINGLEY, MELBOURNE.

(Read before the A.O.U., Adelaide Session, 13th October, 1905.)

It is a matter of congratulation that my note on the actions of the young Cuckoo has started a controversy that can have but a beneficial and educative effect. Too many controversial points that have been published in *The Emu* have been passed by in silence.

Hence, to simplify matters, it would be advisable to systematically go to the root of the matter at issue and more clearly and closely outline the correctness of my contention. The action of the young Cuckoo in ejecting its fellow-nestlings is a guiding propensity or physiological law—a rhythmic action which is really an organic and automatic tendency more fundamental even than instinct—and, moreover, instinct and reason are not divisible into separate powers, there being no line of demarcation between them. First it will be necessary to clearly define instinct and reason, and by illustrations and hypotheses to prove that neither of these powers is operating at the time, and that they do not in any way govern the ejection. The word instinct is derived from the Latin *instinguere*, to excite. From a stimulus or exciter an impulse is derived, but can we call a stimulus or an impulse an instinct? We should seek for every other explanation before using a word so comprehensive, indefinite, and apt to mislead. In all life there are two kinds of stimuli, the permanent and the fortuitous. That which is permanent is born with the animal, and that which is fortuitous is derived externally. The permanent stimulus is inherited, and therefore never erring. Can we logically assume that it is instinct that causes the spermatozoon to enter the ovum, or the pitcher plant to close around a fly and thus entrap it? There is no doubt that certain organisms come into play later on as they become more fully developed, but at this period of the Cuckoo's life-history (a few hours old) these organisms are not developed sufficiently to transmit the power or faculty known as instinct, *implying the degree of knowledge*. Instinct and reason are merely different stages of development running into one another by such imperceptible degrees that it is impossible to draw a line of demarcation. The same applies to the stages of development and metamorphoses of the cells until they arrive at the requisite organisms which convey the faculty of instinct or reason.

The principles determining the order of development of instinct as instanced in the plant world, where leaves, stalk, blossom, and fruit follow one another, are definite and fixed. In the animal world the growth of parts of the body and the appearance of hair, horns, teeth, feathers, beak, &c., are nearly as fixed and unvarying. Since structure and instinct are closely related, we should expect to find a definite order in which the instincts of each species of animal tend to develop. Observation confirms this view in a general way, as young birds do not show the mating, nest-constructing, and caretaking instinct or reason of adult birds, nor do adult birds show the same degree of playfulness as younger birds.

When, however, we attempt to determine exactly the order in which instinct or reason develops, many doubts and difficulties arise. The most common theoretical statement is that instincts develop in that order in which they have been acquired in the history of the race, built as all species are from the lowest forms of the genus upwards. This view is supported by a general biological law, that in the embryonic state each animal goes through stages



of development in which it is successively similar in form or proportion of parts to a higher and still higher animal, till it attains the form of its species. Numerous parallelisms support this view. Most animals have a tendency to move about and their organs to react in definite ways to definite stimuli before there is any chance to experience their favourable or unfavourable character even in a slight degree. This presupposes an outside stimulus. If such a stimulus be not given and received the object is immobile, and consequently inactive, notwithstanding that the latest investigations seem to show that matter itself is life. It is therefore necessary for matter or an object to receive a "primary" stimulus to move and blossom forth into life or action. It is the stimulus that governs the movement, not the movement that controls the stimulus—at least, not the primary stimulus—hence one cannot classify a stimulus as an instinct. By human analogy we find that a person sleeping in bed will, on receiving a certain stimulus, roll over in bed into a more comfortable position without awaking from his or her unconsciousness. Can this be attributed to instinct? Then, again, an analogous case is the migration of birds, in which climatic conditions, apart from food and other conditions, bring about the unfavourable stimulus or stimuli from which the birds move to places where the stimuli are absent or modified. Were there no seasons in the year birds would remain in the one place, and would lose their migratory habits, provided other unfavourable stimuli were absent. Hence we find the permanent stimuli of the seasons and their reflex actions causing migration always at the same season of the year, and mostly in the same direction, the date of migration varying according to the climatic condition of the season. This leads one to the supposition that migratory birds are of a delicate constitution, which, for their survival, causes them to shrink from the rigorous climatic conditions that cause unfavourable stimuli, and travel to suitable zones. The summary of the above necessarily condensed points suggests that the action of the young Cuckoo is a rhythmic one, an organic and automatic tendency even more fundamental than an instinct, and that there is no line of demarcation between instinct and reason, as I will proceed to exemplify. Replace the young Cuckoo in the nest, and exactly the same process is repeated again and again, with a rhythmic precision. Were there no other fellow-nestlings with the young Cuckoo there would be no irritating stimulus, consequently there would be no reactionary movements. Many reactionary movements caused by one kind of stimulus are dependent on other stimuli acting in conjunction with them. For instance, the permanent stimuli of the legs attached to the young Cuckoo cause it to rear up or erect itself in the nest in response to the primary and intermediary stimuli. These stimuli are so co-ordinated and dependent on one another that one can easily trace the details of the ejective action caused by the primary stimuli, and the reaction of that force, together with that of the stimuli of light, with which are combined the stimuli of air temperature or air movement

entering the nest,\* thus controlling and directing the course of the ejection and the other intermediary and dependent stimuli—in fact, the whole metamorphoses. One can also follow the life-history of the embryonic cell until its development to the parts previously mentioned which control the organic and automatic tendency, that is more fundamental than instinct, and which causes the action of ejection. As with other animals, birds are born with permanent stimuli; the legs to lever the body up or run with, the beak to peck or grasp with, the wings as specially adapted levers to flap or fly with. Permanent stimuli are often dependent on secondary stimuli; such as the unfledged wings of a bird, which in their naked state are used as arms, and even legs, to assist in bodily motion or propulsion (paleontology proves this), but when provided with feathers of a proper size and weight and strength, they, together with the naked arms, form a permanent stimulus to fly. It is necessary to illustrate the contentions on which these hypotheses are based. A very important and interesting observation mentioned is the adaptation of the back of the young Cuckoo, hollowed out, as it were, apparently to assist it in ejecting the young of its foster-parents, and it would be still more interesting to know if all young Cuckoos in different parts of the world are so adapted. But granting the adaptation of the back only goes to prove that the operating factor which causes the young Cuckoo to eject its nest-companions is not attributable to reason or instinct. Were the young Cuckoo supplied with these powers it would be quite unnecessary for nature to furnish the concavity in its back, because the powers of reason or instinct would enable the Cuckoo to effect the ejection of its nest-fellows. Probably one of the strongest arguments is this: the young Cuckoo is blind at this stage; the nest is usually dome-shaped; and how could it know which is the opening of the nest from which to throw out its foster-brethren? It could not do it by sight. My hypothesis shows that it must be due to the delicate nerves of the skin, guided by the different temperature of the air or stimulus of light entering the opening of the nest, indicating and directing the correct course. Then, again, the young Cuckoo being blind, how could it tell when all the nestlings were out of the nest unless the skin coming no longer into contact with the heated skin of its fellow-nestlings indicated this fact to it. It is an axiomatic fact that nature is perfect in its methods—how is it, then, that the visual organs, the organs nearest the brain and the most important organs possessed by the bird, are at this stage inoperative. The solution of this problem is that Nature apparently finds the nerves of the skin are all that is necessary to supply the correct stimulus to the brain. A bird's internal organs digest its food whilst asleep—the stimulus of food causing the digestive muscles to act without recourse to either the faculties of instinct or reason. Is it too much to assume that the external organs are endowed with equal powers to the internal organs?

\* A dome-shaped, covered-in nest, with side entrance.

We also have the evidence of Mr. Tegetmeier, the great animal collector, who, when asked what he thought of the wonderful instinct of the homing Pigeon, declared that a "homing" instinct was all nonsense. A Pigeon goes by sight and reason, as we do. Take it from home more than 50 miles and it is completely lost, but if you train it by degrees, beginning with a few miles, it will learn to find its way over long distances. It can see 50 miles, and so by taking longer and longer flights has been taught to fly from London to Brussels. Tegetmeier was largely consulted by Darwin, from whom he received over 100 letters. In an article by Mr. F. M. Littler, cited in *The Emu*, vol. iii., pp. 243 and 123, we have corroborative evidence of my contention that birds do reason. Then we also have evidence that a bird has to be taught its habits and methods, since it is recorded that, when clutches of eggs of British birds were taken from England to New Zealand and hatched out there by foster-parents, the young so reared did not know how to construct their nests after the fashion of their parents and ancestors, there being no similar species to themselves in New Zealand to teach them. Evidence such as this goes to prove the hypothesis that a young Cuckoo cannot reason out the necessity for ridding the nest of its other occupants, but that nature has provided the requisite sensitiveness of the nerves of the skin, which convey the necessary stimulus to the muscles, which in turn cause the ejection. Although the nerves are co-ordinated with the brain, it is unnecessary that the section of the brain governing the faculties of reason or instinct should be called into operation. Then, again, the foster-parent has to place the food in the mouth of the young Cuckoo, and were it endowed at this stage with faculties of reason so highly developed, then it would assuredly bring these into action and help itself by taking its food from its foster-parents whilst in such a ravenously hungry stage of its existence. A further proof that instincts are taught may be proved by human analogy. According to Melbourne and Sydney daily papers, the mother of a child in New South Wales left her infant daily in the fowl-yard for a lengthened period and did not attend to the infant except to occasionally feed it there. It thus herded with the fowls and acquired their habits and instincts or reasoning capacity. When rescued the child was observed trying to chivy the hens around the yard in imitation of the rooster, and afterwards, when taken to a children's hospital, it endeavoured to perch on the railing of its cot, flap its wings, and crow.

By careful study one is led step by step to note that the general conception of instinct is shown to be inconsistent—that is, it instinct be accepted as implying an unchangeable, inborn, or inherited impulse of nature bestowed for the preservation and propagation of animals, the manifestations of which are unconscious. This is at best but a blind way of dealing with the question. Accurate study shows that the greater part of the actions attributed to instinct may be understood in a very different way as arising from training, and afterwards from consideration, experience, free choice,

imitation, &c. When birds like our Magpie (*Gymnorhina tibicen*) build nests of wire; when birds use boxes prepared for them to nest in; when our Ravens rob the nests of other birds; when birds feed in the open mouths of crocodiles, and also on the backs of cows; when the Parrot of New Zealand (*Nestor notabilis*) took to killing sheep; when birds nesting on a firm or stiff bough build a shallow nest, and when on a swaying limb they build a deeper nest, or when they build floating nests to rise and fall with the level of the water; when our Lyre-Birds (*Menura victoriæ*) imitate human and other animal sounds, &c.—can we call these few of many illustrations instinct? Quite erroneous ideas are in circulation. It is said that young chickens, when they have developed to their full size in the egg, break their shells, quit them, and at once stand on their feet, run, and peck grain and insects from the ground; thus arises a whole series of complicated notions, directed to a certain aim, without any teaching, example, or experience coming in. Just the same story is told of young Ducks, which in addition give an especial proof of instinct in that as soon as they leave the egg-shell they run to the water and swim about therein. This last feat is said to be done by young Ducks hatched under hens, which therefore cannot be led to swim by any maternal allurements, and the poor foster-mothers are said to stand in despair because they see their nurselings torn from their protection and are not able to follow them. This all seems so natural that it is generally accepted without demur, and would indeed, were it true, scarcely seem to leave doubtful the existence of instinct in the earlier accepted sense. But in reality matters are very different. That which occurs immediately before the escape of the chicken from the egg does not depend on the independent action of the young bird, but takes place in quite mechanical fashion, as Professor L. Büchner puts it, and as the result of a series of unconscious movements, which are caused by the fact that from 24 to 34 hours before hatching the chicken begins to breathe, and at last requires more air than can pass through the shell. Hence arises a great danger of suffocation, and in consequence of this a strong reflex action takes place, by means of which the chick is caused to strike or push violently against the inner wall of the shell with a sharp bony point formed on the beak and known as the egg-tooth, and the whole body is stretched and extended. Pressure is caused by the natural growth of the body within, and the breaking of the shell cannot long be delayed. But when the chicken is out of the shell it is far from running about and picking up corn. It generally lies for about two hours helpless on its stomach, and neither eats nor pecks, even though a grain of corn be placed in its beak. It then begins to make feeble attempts to move, in which it at first uses its wings just as though they were crutches. It gets up, falls down, gets up again and again falls down, and gets up again, so that its motion looks more like slipping than running. If a noise is made near it—for instance, if anyone knocks a table with the finger—it turns to the side of the noise,

and this is not surprising, as its ear has already to a small extent been used within the shell. During the next 6 hours the chick gradually gains strength and practice enough to run, and also begins to peck at the ground, but blindly and senselessly; for it pecks at everything which reaches the eye, such as little lumps of earth, heads of nails knocked into boards, grains of sand and glass beads, and even at mere bright specks. This is done also by grown poultry, which are frequently seen to peck at the ground although there is nothing to pick up. Even poultry from which the cerebrum has been removed, and which are therefore without consciousness and without feeling, strike mechanically with their beaks on the ground without picking up corn, just as human babies try to put into their mouths whatever is given them. Personally I have repeatedly observed at Sparrow-shooting matches in Melbourne that whenever a Sparrow has been shot only through the cerebrum it flies down or falls down and then stands up and picks mechanically at the ground. It ought not, therefore, to be surprising that chickens should do the same as babies, especially when imitation of the pecking mother comes into play. The imitativeness and the teaching of the mother have a large share in the whole concern, which is proved by the fact that the whole recorded process, until the chick is able to run and feed itself, takes only from 5 to 8 hours if it remains with and under the care of the mother, while it takes from 8 to 16 hours if the chick be taken away from the mother after hatching. Then, again, the young chicks before they are born can be heard cheeping inside the shell, and should the mother give a warning note on approach of danger, the cheeping instantly ceases, and when all danger is passed the cheeping is resumed. Therefore is it possible that an unborn fœtus can reason, or even be trained? One cannot blindly attribute the action of a fœtus to instinct or reason whilst covered in by the shell from all external influences except those conveyed by osmosis. The only stimulus obtainable by osmosis would be given externally to the nerves of the skin. How often, as a boy, have I taken a chicken and by placing it on my knee and putting its head under its wing, caused it to go to sleep in response to the stimulus thus applied. Ducklings go through their initial stages almost the same as a chicken. When they have gradually learned to drink they peck at a shining wet surface as if it were water. Placed in a pond, they try to get out as fast as possible, and make active movements with their legs which teach them to swim. When ducklings reach dry land they shake themselves and try to clean off the water. The same thing happens if given milk to swim in. These incidents go to prove that Ducks have no instinctive love for water, and it has been observed that Geese have been known to push their goslings into water, as also Wild Ducks have been known to carry their young on their back when taking them from the nest, miles away from water, and depositing them in it. The stimulus of the water to their legs causes them to paddle with them and so swim, whilst the down causes them to unconsciously float, which clearly proves

that they are provided by nature with special adaptations to suit their environments, and that these adaptations are not instincts. One cannot therefore talk of a Duck's innate love of water. Every organism must conform to the laws of rhythmic seasonable changes. We know that eggs are hatched out by solar rays only. So also must the chick, after being hatched out, conform to the same conditions and be governed by its environments—hence environments govern from without. Were Nature to leave everything to instinct there would be no necessity for special adaptations, and we should find that the young Cuckoo, if thrown into water, like the young duckling, would assuredly use these faculties, and so swim out by the same process as the young duckling. But in practice we find that in the first place it cannot see; secondly, it cannot float, having no nesting down or permanent stimuli to suspend it; and, thirdly, it could not swim with its present type of legs, because Nature has not endowed it with the permanent stimuli of webbed feet to paddle with. But Nature has given it special adaptations for its preservation, such as the faculty of ejection, the absence of nesting down confirming this to some extent, because the nesting down would cover and shield the sensitive nerves of the skin. Hence we ultimately find that there is no difference between instinct and reason, but that reason is knowledge. Knowledge comes from teaching, therefore teaching = reason. Reason is wanting in the young Cuckoo, because what training did it receive? That cannot be shown, and is only answerable by attributing its action to a stimulus, and as I have shown that a stimulus imparting an impulse is received from without, and is consequently governed externally, it would be absurd to assume that the primary or external action is instinct or reason, but that instead it is a guiding propensity or physiological law—a rhythmic action which is really an organic and automatic tendency more fundamental even than instinct.

## The Moults of the Blue Wren (*Malurus*).

BY A. G. CAMPBELL, MELBOURNE.

(Read before the A.O.U., Adelaide Session, 13th October, 1905.)

I HAVE here a note sent me by a friend in the Black Ranges, near Stawell (Victoria). I offer it, with a few remarks of my own, as a basis for a short discussion:—

“WINTER MOULT OF THE BLUE WREN.—Having passed the winter in a fixed camp, I have had excellent opportunities of watching this fascinating development. Our camp consisted of three tents, shielded by a rough semicircle of breakwind, which partly enclosed a piece of ground about 40 feet in diameter. This ground soon became bare of grass by continual usage, and on this clean granite floor crumbs were daily thrown, which attracted many interesting

visitors, whose increasing confidence towards us in time turned to indifference. Among the more confident were Robins (Yellow- and Scarlet-breasted), Blue Wrens, Tree-creepers, and Grey Thrushes. Of these the Blue Wrens ranked first in interest. There were eight of them—four males and four females—and although the latter were nearly impossible to distinguish from each other, the former had each his individual trait, as will be seen. Of these males two were blue and two grey. The first blue male was a particularly handsome fellow. The dark blue feathers on the back seemed to me abnormally developed, for when the wings were at rest they were covered to the tips, whilst the tail, owing to these slightly overlapping blue feathers, was normally carried at a much lower angle than usual. The second male had his grey wings when at rest almost fully showing. The third and fourth were distinguishable at first only by the deeper blue in the tail of the former, but on 15th July this bird developed dark spots on the side of the head like ears; next day these spots had enlarged, and on the third day both cheeks were pale blue owing to the sudden opening out of the new feathers, while the dark blue spots had increased and enlarged. Soon an irregular patchwork was seen, which by the replacement of old feathers with new gradually evolved more regular form; the colours cleared and brightened, and in a fortnight's time—*i.e.*, on 29th July—the glory was complete. During all this change a distinct increase of self-respect was noted; he avoided with less margin the running charges of the Tree-creeper in the dispute for crumbs, and expanded his chest more often in song. As the fourth bird remained grey I thought it too young to change, but was surprised on 9th August to notice dull spots on the chest; however, they were merely of a deeper grey, and as the days passed no alteration was visible. It was shortly after this, on the 16th inst., during a walk, I noticed a male half through the moult—this, of course, was not connected with the eight birds that up to this time regularly visited the camp each day. On 23rd August, however, the last male noticeably changed, the spots growing darker and larger, and the moult, starting from the breast in this case, finished on 12th September inst.

“The hen birds, of course, have also undergone a renovation, the extent of which is not easily seen, though like the males the new tail feathers are readily discernible. When they flit about with their little reddish beaks taking crumbs here and there with the quickness of thought, their long ‘rudders’ grey in the shadow but with a peculiar bluish metallic sheen when the sun catches them, not to mention their dainty appearance, fully compensate for the absence of those colours that are the pride and glory of the males.—CHAS. F. PAWSEY. Camp near Grampians, 15/9/05.”

The Wrens are a fascinating family in many ways. Among our common birds of the bush and garden they are the only ones that don a bright livery for one season of the year. It is held by some that there is no such change, and the proof is offered that blue birds can be seen at any month of the year.

Now, the time spent in the brown stage is sometimes so short, and the change from one to the other is often so irregular, that this may appear correct. But the same bird cannot be seen blue all the year.

In an isolated suburban garden I have, for two years, had the opportunity of observing what I have little doubt is one family. From my note-book I take the following:—"Burnley.—Male Wren moulting, Mar., '04; remoulting, first week July. Moulting Mar., '05; remoulting, first week in June. The change takes about a fortnight, and the bird remains as much in hiding as possible during that time. The moult begins with the ear coverts, and when complete the male is only distinguished from the female by the absence of rufous colour about lobes and eyes, by its black beak, darker legs, and particularly by the blue tail."

This moult is a complete changing of feathers, and is not a mere alteration of pigment.

A female Flame-breasted Robin, when it first arrives in winter, is very dark in the plumage, but in two weeks' time it is considerably lighter. The pigment has faded\* to suit more open surroundings than those in the forest from which the bird has come. So, too, with some birds having barred or streaked feathers, youth is characterized by the dulness and indistinctness of these markings. But the bands or streaks on each feather gradually become more distinct without any moult. The dark bands become darker and narrower by a concentration of pigment, and the light parts become whiter, and often larger, by a disappearance of colouring matter.

I hold, too, in connection with the Blue Wren, that it is not polygamous. Certainly there are often seen several brown ones with each male bird, but these are lonely spinsters, or possibly young birds, that follow him about for company. In parts where males are very common this is not noticed. The mature blue bird has the experience that can find the food supply, scent danger, and ward off enemies.

But this and other matters in connection with this brilliant genus are awaiting more enlightenment. I think that my friend's note breathes the true observer's spirit. We want more of this sort of thing. We know sufficient for the present of relationships of species and their eggs, and other structuralities. We want to get at individualities, at the inner circle of the bird's existence. To do that we must come away from our pedestal as humans civilized, and descend (or ascend) to a level where we can recognize the bird's (and our own) part in the one great scheme of creation. We must live with the birds, and observe them on their own terms as natural citizens, not on ours. This

\* This supports the theory of many modern zoologists that loss of colour is largely due to attrition—the wearing away of the outer scales of the feathers.—EDS.



is the true naturalist's spirit, not in clumsily collecting skins or eggs and laying them by where few can see them, but in interpreting the birds and their ways in their own home.

## Birds New for Australia.

### NEW FRUIT-PIGEON.

MY friend Mr. E. M. Cornwall, Cairns, North Queensland, writes:—"I am sending you a skin of a very small Pigeon which I cannot identify. I shot it on the 21st May, 1905, in a big fig-tree while it was feeding with several more like itself, in company with the Fruit-Pigeons *Ptilopus superbus* and *P. swainsoni*"

The bird, which is a female, is undoubtedly new, for Australia at least. It most resembles the Tiny Fruit-Pigeon (*P. nanus*, Temminck), of New Guinea,\* but is slightly larger. The new bird may be described as:—General colour, bronze or metallic green, the wing coverts and secondaries being edged with yellow; primaries, dark grey edged with yellowish white; tail, bronze-green; throat, greyish; the greenish feathers of the under surface slightly tipped with yellow, the abdomen being mottled with a yellowish-white patch; under tail coverts yellowish-white. Dimensions in inches:—Length, 7.5; wing, 4.75; tail, 2.5; bill, .5; tarsus, .6. Compare dimensions of *P. nanus*:—Length, 5.8; wing, 3.5; tail, 1.75; bill, .4; tarsus, .5.

It is just possible that on account of its arboreal habit, very small size, and plumage closely assimilating the colour of the foliage which it frequents, this new Pigeon has escaped the notice of other collectors. Doubtless, when the male has been discovered he will be found to possess a distinctive abdominal band, characteristic of this race of diminutive Fruit-Pigeons, several species of which inhabit the Papuan Region. Until the male be examined, I venture to suggest, as a provisional name, *Ptilopus minutus*, or the Small Green Fruit-Pigeon.—A. J. CAMPBELL.

### WOOD-SANDPIPER (*Tringa glarvola*, Linn).

The occurrence of this wanderer in Australia establishes an interesting record. Mr. E. G. Austin, of Booriyallock, Skipton, Victoria, shot a specimen on his estate recently.† I have examined the bird, which has been skilfully mounted by Mr. A. Coles, taxidermist. It is not surprising that the Wood-Sandpiper has occurred in Australia, seeing that the species has a very extensive range. According to Seebohm, "it has occurred in the Faroes, and may be regarded as a somewhat irregular

\* "Birds of New Guinea" (Gould-Sharpe), vol. v., pl. 51.

† End of November, 1905. There was only one bird seen, which was on the edge of some fresh water.

visitor on spring and autumn migration to the British Islands, on very rare occasions remaining to breed. It is a summer visitor to the whole of Europe north of the valley of the Danube, and to Siberia, Turkestan, Mongolia, and the extreme north of China. It probably breeds as far north as land extends, as Middendorff found its nest in lat.  $70^{\circ}$  on the Taimyr Peninsula. It winters in the basin of the Mediterranean, and in suitable localities throughout Africa. In Asia it winters in Persia, Beloochistan, India, Ceylon, the Burma Peninsula, and the islands of the Malay Archipelago, but only passes through Japan and South China on migration."—A. MATTINGLEY.

### The Scrub-Tit (*Acanthornis magna*).

BY A. L. BUTLER, A.O.U.

(Read before the Tasmanian Field Naturalists' Club, 12th June, 1905.)

THIS rare bird is peculiar to Tasmania. I have always been deeply interested in it since the year 1875, when I first observed it in one of the gullies on the slopes of Mount Wellington. A note taken at that time was to this effect:—"Saw a new bird to-day; was not Brown-tail (*Acanthiza*) or Scrub-Wren (*Sericornis*); had white spots on wing, and light yellow underneath." From that time up to the present I have always closely watched this bird, spending many hours in so doing.

In 1881 (October) I first found the nest, which was placed about 4 feet from the ground in a wild currant tree, just on the edge of the scrub, near the old Huon road, and was of the following dimensions:—Height,  $7\frac{1}{2}$  inches; diameter, 8 inches; width,  $4\frac{3}{4}$  inches; and entrance,  $1\frac{1}{2}$  inches; and contained three young birds about four days old. In 1883 I met Mr. A. J. Campbell, the noted oologist, on one of his visits to Hobart, and at his request procured a specimen of this bird for him. My next entry is made in 1885, when, on the 15th October, I took a set of three eggs from a nest, also in a native currant, but this time in a gully near the Old Farm. From that time up to the present I have inspected in all 27 nests with either eggs or young, and the average measurements are about the same as I have already given, but the position of the nests varies much, according to the kind of scrub in which it is situated. I have found them as low as 3 inches from the ground, and as high as 9 feet in grass and ferns, and then again in the dead fronds of the tree fern. This latter is a favourite place, especially on the northern slopes of the mountain—that is, Glenorchy and Kangaroo Valley—where all but one that I have found in those localities have been so placed. The last nest I took was the exception, this being in the favourite native currant, and, with the eggs (two in number), is now in the possession of Mr. D. Le Souëf.

I have only shot two specimens of this bird, one of which I dissected, and found that the stomach contained parts of various

insects, small snails, and beetles. This was an adult male. The other was the bird I shot for Mr. Campbell.

I have spent many hours watching this bird feeding and building its nest, and to my mind it closely resembles the Tree-creepers (*Certhiidae*). With its mouse-like movements, it will fly to the base of a tree fern, run rapidly to the top and down the other side, just pausing long enough to grasp an unwary beetle, or some such small object, then off again to another tree, and repeat the performance.

When building it is very wary, and if it sees anyone watching it will at once begin to put the material which it is carrying in quite a different place from where its nest is situate, and will do this for some time, making several trips and bringing material to do so. This I have noticed several times, and when the intruder has withdrawn for some time it will go on building at the nest, sometimes using the material it has placed in the false position, but more often leaving it where it was first put. They will go a long way for material suitable to their needs, and on one occasion I followed a pair of them for over a quarter of a mile. They had found a dead opossum, and were engaged in lining their home with its fur. It took me just over an hour to find that nest, though some 200 yards of the distance was open country.

Whilst it is feeding its note is a short "Cheep, cheep," but at times you will hear it trilling out a little song something like the Calamanthus (Field-Wren), but not so full or sustained as that bird's note.

It would be a difficult matter to place any limit to the distribution of this species, as I have seen members of it at the Huon, Carnarvon, North-West Bay River, Glenorchy, Bismarck, New Norfolk, &c., and as high up on the mountain as the Springs, and under the Organ Pipes.

There is just one word to say in closing, and that is, I hope that members and others will not destroy this interesting bird, but will remember that, as the land is being cleared, it will retire to the backwoods, and only leave a few of the more venturesome of the tribe to eke out an existence in some secluded spot. Watch them, note their habits, but do not take their life.

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### Stray Feathers.

FOUR CURIOUS NESTING PLACES.—I am sending two photos, of peculiar nesting places. One is the nest and three eggs of the Grey Thrush (*Collyriocincla harmonica*), in the wickerwork off a demijohn, and the other a nest and two eggs of the Pipit (*Anthus*). The latter was found on the Casterton Golf Links, the former in the scrub along the River Glenelg, evidently carried there at flood time. I have also had presented to me a nest with four eggs of the Little Crake (*Porzana palustris*). The nest was placed in an old jam tin in a vertical position, in a clump of

round rushes in swampy ground in the town, and quite close to a road with much traffic. I have been to the locality to see for myself, and flushed the birds, which may possibly breed again. Again, at the local rifle butts, there is a Swallow's (*Hirundo neoxena*) nest built in a old pair of trousers hanging up in the marker's shelter alongside the target. I must say it is a very remarkable thing to get these four nests in such unusual sites, especially those in the old tins. The Crake's nest is made of the round rushes only, and the tin is one of the size of a "lobster" tin, and as the nest material is small in amount, it means that the bird must have had to manœuvre somewhat to get in, but her long legs would doubtless come to her aid.—(DR.) ERNEST A. D'OMBRAIN. Casterton, Victoria, 12/11/05. For the nest of the Grey Thrush see Plate XII.

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LONGREACH (Q.) NOTES.—The Tricolored Chat (*Ephthianura tricolor*) was very rare on the Peak Downs before the drought, but now flocks of 20 and 30 can be seen feeding on the ground, generally on a bare red soil ridge with dead timber. Since I have been working near Longreach I have seen flocks of 60 or 70, and they are quite common in the Boree forest, where the soil is brown.

The Red-capped Robin (*Petrarca goodenovi*) is here now, but I have seen only females, or else the males have lost their bright colours.

A great part of Central Queensland was visited last December by an irruption of Native-Hens (*Microtribonyx ventralis*), upper mandible green and lower red, much resembling in general appearance a Game Bantam hen. They came in tens of thousands, and ate the frontages of all waterholes quite bare, besides polluting the water. They became very tame, and came into the streets of the country towns, and suddenly left in April, but from what direction they came or which way they went nobody seems to know. At first they were welcomed as allies of the Ibis army doing battle with the young locusts, but examination of their crops showed that they were vegetarians strictly.

A sight for bird lovers is a flight of Betcherrygahs or Warbling Grass-Parrakeets (*Melopsittacus undulatus*) on the Peak Downs. To attempt an estimate of the numbers in some of the flocks is useless, and one would be accused of exaggerating, but I have seen some masses of green and gold some chains long and over a chain wide. The speed and concerted movement as they sweep round and round and in and out of the timber in a perfect ecstasy of flight are, I think, unequalled by those of any other bird: one minute they will be almost lost to sight as they turn edgeways, and the next present a broad waving ribbon.

Flock Pigeons (*Histriophaps histrionica*) came to the Peak Downs this year for the first time to my knowledge, the drought which still rages at Winton being, I expect, the cause.—F. B. C. FORD.

ADDITIONAL NOTES ON THE NESTING OF PHAPS CHALCOPERA AND OCYPHAPS LOPHOTES.—As the Pigeons had been at work from the end of August till the latter part of March, I concluded they would recommence about the same time this year, therefore judge of my surprise when upon going into the Crested Bronze-wings' aviary on the 20th of June I found two eggs in the nest, and in the aviary of the Common Bronze-wing one egg, the second being laid the following day. I can assign no reason for the birds nesting (both varieties) fully two months earlier than the preceding season, excepting that we had not had the usual severe frosts, and the weather, though wet, had been fairly mild. The Crested Bronze-wings failed to hatch their eggs. This variety, being nervous and excitable, is much more easily driven from the nest than the others. The Common Bronze-wing hatched both eggs, and the young did well until about the eleventh day, when in the night we had a sudden and heavy downpour, and although protected from the rain I found both dead next morning. At that age the mother is not able to cover them both well.

On the 13th of August the Common Bronze-wing had laid again two eggs in an open box, in which I had placed some fine wood shavings and a few pine needles on top, the birds adding to the latter later on. In the course of three or four days I found the Crested variety also had built, this time a tiny nest with pine needles in a tecoma, and was sitting upon two eggs. The Common Bronze-wings hatched their young, and when a fortnight old they were out of the nest; owing to the ground being damp and cold I replaced them, and they were just beginning to fly when to my dismay I found one dead yesterday morning (the 17th). On going to the nest last night I noticed the survivor alone in nest, the parents roosting beside it; it looked so bright and well that I thought I would risk leaving it there, but, unfortunately, this morning it also had died in the nest. I wonder they survived so long, as we have had a great deal of rain and two heavy falls of snow since they were hatched. The Crested reared only one young out of second lot, and the nest was so small at first as to make one wonder how the young would be kept in it, but as soon as it was necessary the parents enlarged it considerably. (I notice both varieties replenish the nest after the young are hatched.)

I may further remark that, although I have kept the Common Bronze-wings for some years, I never observed till lately how very fond they are of worms, snapping them up eagerly directly they are thrown towards them.—(MRS.) MARY G. ROBERTS. Hobart, 18/9/05.

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THE GANNET.—It is very interesting to watch the diving operations of the Gannet (*Sula sula*), especially when conducted on so large a scale as has been the case recently on this coast. A

great shoal of the delicate little fish called whitebait has made its appearance in our waters, and hundreds of bird pursuers are relentlessly following it up. Yesterday afternoon I counted 63 Gannets in one group floating on the blue waters of the Mersey, just where it debouches into the Strait, enjoying in the sunshine a brief spell from their fishing labours. Although I have repeatedly watched the Gannets diving off the coast of New South Wales and elsewhere, I never remember seeing them present in such numbers as here just now. When over a good shoal of fish they literally tumble by dozens and scores into the water, reminding the watcher of a shower of huge snowflakes melting into the waves; it is marvellous how they avoid striking each other when descending in such numbers and with such velocity into a small patch of water, each apparently oblivious of everything except that one little object it has sighted beneath the surface. The dive into deep water is usually made from a height of 18 to 30 feet, and is a literal "header," the bird usually entering the waves nearly vertically, and with a splash: a perceptible interval elapses before it reappears some little distance away, giving its yellowish beak a swish backwards and forwards after swallowing its prey. It usually sits a few seconds upon the water before going aloft again, thus differing from the Tern, which takes to its wings the moment it reaches the surface. When diving in shallow water close to the rocks, the Gannet begins the descent from a height of 4 or 5 feet only, instead of 20 or 30 feet. The wings are not closed, as is usually supposed, at the beginning of the descent, but remain expanded until the bird is close to the surface, and apparently assist in guiding it to the exact spot which it desires to reach; it then flaps them suddenly to the side of the body, and the admirable adaptability of its shape to its aquatic life may be well seen just as it enters the water, the long beak, head, neck, and body stretched out rigidly in one straight line, the legs and wings tucked closely in, everything arranged so as to offer as little resistance as possible to the water. Few prettier sights can be imagined than a company thus engaged in diving on a spring afternoon, with the sunshine above and the blue waves beneath; the plunge is made with such zeal (there are no half-measures about the bird's dive).

A few pairs of Terns (*Sterna bergi*) may be seen fishing in company with the larger birds, but the dive is a much milder affair in this case, the bird not going any depth, and in some cases only half-submerging itself, and rising on the wing immediately afterwards: it has a peculiar way of bending its head down when on the wing, looking for prey, and this, combined with its sharp-pointed beak, gracefully curved wings, and forked tail, render it unmistakable. The Gannet fishes very silently, hardly a sound escaping from the whole large company, but the Tern, while coursing up and down, frequently utters a querulous kind of whistle or wail, sometimes varying this by a harsher guttural cry.—H. STUART DOVE. West Devonport, Tasmania.

BIRDS OBSERVED AND BIRD-SKINS EXAMINED IN 1905.—Scarlet-breasted Robin (*Petroica leggii*): Variation in Plumage.—On the 13th of March my attention was arrested by the loud and oft-repeated calling of a small bird. The notes were those of the Scarlet-breasted Robin, and were unusually loud. On approaching the bird I observed that, although in other respects it resembled a male Scarlet-breasted Robin, it had a pure white breast. It thus resembled *Petroica toitoi*, but good reasons why it could not have been that bird readily occur. The white frontal spot was sufficient to distinguish it from the Hooded Robin (*P. bicolor*), and I have no doubt that it was a white-breasted variety of *P. leggii*. It returned on the following day.

Flame-breasted Robin (*Petroica phoenicea*).—One adult male was seen on the 4th of July, near South Bridgewater, in the company of a small flock of White-fronted Chats.

Satin Fly-catcher (*Myiagra nitida*).—The latest record in the autumn of this year is 20th February, when three or four birds were seen (Mr. W. Duffy). The bird utters a series of peculiar sibilant notes when flying. When it perches the tail quivers rapidly.

White-fronted Chat (*Ephthianura albifrons*).—A flock of eight White-fronted Chats was observed on the 4th of July on Bridge-water Causeway. They came from the east bank of the river, and paused to feed amongst the drift-weed and debris on the embankment. I have not observed these birds on the west bank of the Derwent.

Grey Butcher-Bird (*Cracticus cinereus*).—An adolescent male had the marginal wing coverts tipped with buff and the median wing coverts tipped with olive; the feathers of the mantle had brownish-olive tips. Iris light brown. Length, 10.5 inches; wing, 6 inches; culmen, 1.56 inches; tarsus, 1.53 inches.

White-bearded Honey-eater (*Meliornis nova-hollandia*).—In an adolescent male and an adolescent female the malar tufts of the adult were absent; the small projecting white feathers on each side of the base of the lower mandible of the adult were also absent, but there were a few small buffy-white feathers which extended from the base of the lower mandible to the ears; the hair-like feathers on the chin were darker in colour than the corresponding feathers of the adult; the heads were not black but brownish-black, and the colours of the breast feathers were not markedly contrasted. The feathers of the mantle of the adult are black, with white edges; those feathers of the adolescent birds were uniformly dusky-brown; the bills were brown, blended with horn colour.

Azure Kingfisher (*Alcyon azurea*).—The comparative scarcity of this bird in the south of Tasmania must be my excuse for mentioning a well-nigh belated instance of its occurrence. In March, 1901, an Azure Kingfisher (the stuffed skin of which I have seen) was shot near Broad Marsh, in the county of Monmouth (Mr. T. Bowden).

Pallid Cuckoo (*Cuculus pallidus*).—The latest date in autumn at which I have a record of this Cuckoo in an adult state is 19th

March (Mr. W. Duffy); the earliest date in spring is 21st August (Mr. A. R. Reid).

Fan-tailed Cuckoo (*Cacomantis flabelliformis*).—The latest autumn record is 27th February (Mr. W. Duffy); earliest spring record is 4th September, on which date a bird was seen by myself. It permitted a near approach, and I was able to perceive the rufescent tinge on the breast and the toothing of the tail feathers. When at rest on a branch the bird maintained an erect position, with the tail pendent; when it alighted it jerked the tail upwards, but not so much as the Pallid Cuckoo does.

Silver Gull (*Larus nova-hollandiae*).—One was observed feeding on small crabs, which were swallowed whole. It obtained them in shallow water, either by dipping its head into the water or by jumping out of the water and taking a little dive. As is the case every winter, many Seagulls visited the grass fields, but this did not occur in stormy weather only. Thus on the 10th of July about 100 Seagulls appeared in a field on a fine morning with a gentle southerly breeze blowing. Adolescent birds, having the wing coverts more or less speckled with stone colour, accompanied the adults, but were fewer in number than these.

Little Penguin (*Eudyptula minor*).—I take this opportunity of qualifying some of my remarks regarding this species which appeared in *The Emu* of April, 1904.\* The downy covering of a pair of young birds, which I called "nestling down," might be better named a second growth of down. It is what Gould has called "the downy dress of immaturity."† This down grows among the blue feathers of the back, and conceals them wholly or partly. But I do not think that the down in question has its origin earlier than the blue feathers, for the dorsal surface even of the foetus has a covering of embryonic feathers which have some resemblance to the feathers which cover the back of the perfect bird. I have read that at the time of moulting the plumage of Penguins sloughs in patches, so that in not a few respects the processes connected with the growth and moulting of feathers differs amongst Penguins from these processes amongst other birds. The latest date on which I saw Little Penguins in the Derwent was the 17th of July. On the 11th of the same month I had seen two birds swimming side by side and diving simultaneously, and had inferred that the mating season had commenced.

Shildrake (*Casarca tadornoides*).—A duck was shot at Pipeclay Lagoon, South Arm, about the 11th of March (Mr. W. Richardson).

Grey Teal (*Nettion gibberifrons*).—One bird (a drake) had the stomach full of the shells of a minute mollusc resembling a *Cantharidus*.

Freckled Duck (*Stictoneila nervosa*).—Two birds (duck and drake) were shot near South Bridgewater in the third week of March (Mr. A. Dickenson).—JAMES R. M'CLYMONT. Sandy Bay, Hobart.

\* Vol. iii., p. 237.

† "Handbook to the Birds of Australia," vol. ii., p. 521.



## Forgotten Feathers.

BIRDS AND THEIR NAMES AND DWELLING-PLACES IN THE "NOUVEAU VOYAGE A LA MER DU SUD."—The middle of the eighteenth century is approximately the period in which the collection and scientific classification of plants and animals became one of the chief aims of exploratory voyages. It was intended that it should be one of the aims of the expedition under the command of Marion du Fresne, and Commerson, a botanist, who had participated in the expedition under the leadership of De Bougainville, was expected to accompany that of du Fresne also. But he was unable to do so, and no botanist or zoologist made the voyage. Crozet, however, who was second in command of the *Mascarin*, has left to posterity not a few observations relating to the animals and plants which he saw during the voyage or in the countries which he visited. Although they were made by one who expressly disclaims a scientific knowledge of natural history, they are interesting, and not unimportant because of their early date. The expedition, of which Marion du Fresne was the leader until the time of his death in New Zealand, was undertaken primarily in order to restore to the place of his birth a Tahitian who had accompanied De Bougainville to France, but also, in a secondary degree, in order to ascertain if a continent or islands existed in the southern seas where useful products might be obtained and shipped to Mauritius and the other French colonies in the Indian Ocean. The Tahitian fell sick shortly after the commencement of the voyage, and was put ashore in Madagascar, where he died. Subsequently, near the island which is now known as Prince Edward Island, a collision caused the partial disablement of the *Marquis de Castries*, the search for a continent was abandoned, and it was resolved to visit the countries which had been discovered by Tasman in the century which preceded that of the expedition.

The first entry relating to birds is on the 8th of January, 1772—about twelve days subsequently to the departure of the vessels from the Cape of Good Hope. Terns were then observed, and thereafter until the 13th of the same month Terns and Gulls were seen frequently. The name by which the gulls are called is "Poules Mauves"—female Gulls. These may have been immature birds of both sexes mistaken for adult females. At the latter date the voyagers were in the vicinity of Prince Edward Island and Marion Island, and thenceforward until they left the Crozet Islands behind them they frequently saw birds, which are called "Pinguins" (that is to say, Auks) and "Plongeurs." The former were doubtless Penguins. The "Plongeur" is the Diver (*Colymbus*). Crozet, however, may have regarded Grebes and Divers as members of one family and

as having a name in common, and if so the assertion of Litré that the name "Plongeon" was given to Diving-Petrels is probably correct. On the 24th of January Crozet landed upon an island on which the name Ile de la Prise de Possession was bestowed, and which either is or is in close proximity to the Possession Island of modern charts. The sea birds which were nesting on it continued to sit and to feed their young in his presence. Here were found Penguins, "Plongeurs" (probably Diving-Petrels), Cape Petrels, and Cormorants.

Let us endeavour to elucidate these observations of Crozet by the light of modern research, whilst we remember that their non-scientific character renders only a wide generalization possible. The Terns to which our author alludes were probably of the species *Sterna vittata*, for that bird breeds on St. Paul's and Amsterdam Islands. It has also been observed at the Tristan da Cunha Islands, Gough Island, and Kerguelen Island. The Gulls were probably of the species *Larus dominicanus*, which has been observed at a considerable distance from any continental land. The Penguins which have been observed in the seas adjacent to the Crozet Islands are *Aptenodytes patagonica*, *Pygoscelis papua*, *Catarrhactes chrysocome*, and *C. chrysolophus*. The eggs of the last-named species have been obtained on Crozet Island.\* The Diving-Petrel (*Pelecanoides exsul*) frequents the seas in the vicinity of the Crozet Islands; its eggs are still undescribed. The Cape Petrel (*Daption catensis*) is known to breed at the Tristan da Cunha Islands and at Kerguelen Island; its eggs have been found recently.† A Cormorant (*Phalacrocorax verrucosus*) inhabits Kerguelen Island, but its occurrence on the Crozet Islands is a matter of uncertainty.‡ Finally, a bird was seen which was mistaken for a white Pigeon, and from its presence Crozet naively argued the existence near at hand of a country producing seeds adapted for the sustenance of Pigeons. This bird may have been the Sheath-bill of the Crozet Islands (*Chionarchus crozetensis*).

The duration of Crozet's sojourn in New Zealand was about four months of the autumn and winter of 1772, and the time was spent in the Bay of Islands. Our author presents a goodly array of the names of birds which he saw in that locality, but it would be unprofitable to seek equivalents for his Wheatears and Wagtails, Starlings and Larks, Ousels and Thrushes, as well as for most of the birds which he found in Tasmania—to wit, Ousels, Thrushes, and Turtle-Doves. One exception may be made in respect of black Thrushes with white tufts (*grives noires à huppés blanches*). This description evidently refers to the Tui

\* "Catalogue of the Collection of Birds' Eggs in the British Museum," vol. i., p. 143.

† *The Emu*, vol. v., p. 91.

‡ "Catalogue of the Birds in the British Museum," vol. xxvi., p. 394.

(*Prosthemadura novæ-zealandiæ*)\* Crozet distributes the birds which he saw in New Zealand under the four heads—birds of the forest, of the lagoons, of the open country, and of the sea-coast. In the forests were Wood-Pigeons as large as chickens, of a brilliant blue colour. The description, though scant, is sufficient, for there is only one Pigeon in New Zealand, and no bird which is likely to have been mistaken for a Pigeon. We cannot err therefore in believing *Hemiphaga novæ-zealandiæ* to be the "Pigeon Ramier" of this narrative. Two Parrots were observed—a very large Parrot, in colour black (or dusky), diversified with red and blue, and small Lories, which, it is said, resembled the Lories of the Island of Gola. This comparison in no wise assists one, for the Island of Gola is, it seems to me, absolutely unidentifiable. The Lories were doubtless *Cyanorhamphi*, and possibly of more than one species. The Parrot which one would expect to find in the north of the North Island is the Kaka (*Nestor meridionalis*). If this be the bird to which Crozet alludes his description is somewhat imperfect, for blue does not appear in its plumage. The Kea (*Nestor notabilis*) has blue under the wing, but is not found in the North Island. In the open country were the small Passerine birds, to which Crozet gave the names of European birds with which he was familiar. There also was a Quail (*Coturnix novæ-zealandiæ*), which of recent years has become extinct. On the lagoons and their margins Duck and Teal were abundant, and a "Poule Bleue" similar to the Poules Bleues in Madagascar, India, and China. This Poule Bleue is evidently one with the "Poule Sultane"—our Swamp-Hen or Purple Gallinule (*Porphyrio*). *Porphyrio melanouotus* is the New Zealand species. It also inhabits Tasmania and Eastern Australia, and is replaced by *P. poliocephalus* in India, *P. edwardsi* in Cochin China (not, apparently, in the Chinese Empire), and *P. porphyrio* in Madagascar. On the sea-coast were Cormorants, Curlew, and Black and White Egrets. The Curlews which migrate to New Zealand for the southern summer are of the species *Numenius cyanops*. They depart in the autumn, with the exception of a few birds which remain through the winter in favoured localities.† Pied Egrets are suggested by the expression *Aigrettes blanches et noires*, but there are no Pied Egrets in New Zealand. It is perhaps to the White-headed Stilt (*Himantopus leucocephalus*) that Crozet alludes. A black bird of the size of an Oyster-Catcher, with a bright red bill and red feet, also frequented the beaches. It was without doubt the Sooty Oyster-Catcher (*Hæmatopus unicolor*). Among birds which visited coastal waters Crozet names Terns and Gannets. Amongst the Terns

\* Pelicans seen in Tasmania were doubtless of the species *Pelecanus conspicillatus*.

† "Buller's Birds of New Zealand," vol. ii., p. 42

which most frequently appear off the New Zealand coasts are *Sterna frontalis* and *S. nereis*. *Gygis candida*, which appears occasionally, may be the "Goëlette blanche" of Crozet. The Gannet was of the kind called "manche de velours," concerning which we are possessed of the information that it was found in the warm latitudes of the South Atlantic, especially when approaching the latitude of the Cape of Good Hope, and that its body was white and its wings dark in colour. The Masked Gannet (*Sula cyanops*) has a white body and wings of a rich chocolate-brown, which might fitly be described as velvety. It is a bird of the tropical and sub-tropical seas of the world, and has a place in the avifauna of New Zealand. From New Zealand the two vessels, now under the command of Duclesmeur, sailed to Guam, and thence to the Philippine Islands, but as the observations of Crozet regarding birds seen after his departure from New Zealand are of little moment we will follow him no farther.—JAMES R. M'CLYMONT. Sandy Bay, Hobart.

### From Magazines, &c.

BIRD PROTECTION IN U.S.A.—The work of the Audubon Societies steadily progresses in most States, and a very good idea has been adopted by the Legislature of Oklahoma. The new *Education Act* provides that public school teachers are to instruct pupils in humane ideas and kindness to wild life for one half-hour each week. A teacher cannot draw pay unless this provision is carried out.

\* \* \*

ATTACKED BY EAGLES.—Merino, Friday.—A woman named Barker and a little girl about seven years of age were savagely attacked by three large Eaglehawks yesterday in the Laggan Paddock, adjoining their residence. The Eagles had rounded up a lot of crossbred ewes, and to protect these Mrs. Barker went across, taking the child with her. The birds suddenly made a concerted swoop, and at one time nearly succeeded in fastening on the child, notwithstanding the piercing shrieks of the mother, who eventually gathered the child in her arms and beat a hasty retreat to her home.—The Melbourne *Argus*, 18/7/05.

\* \* \*

THE YELLOW-RUMPED FINCH.—*The Avicultural Magazine* for May, 1905, contains a beautiful coloured plate of the rare Finch *Munia flaviprymna*. The accompanying letterpress is by Mr. D. Seth-Smith, F.Z.S., who states that about a dozen living examples have arrived in London of late. Mr. Seth-Smith purchased a pair. The call note of this Finch is described by him as a pretty piping note, exactly like that of its near ally, the Chestnut-breasted Finch. Mr. H. E. Peir, Sydney, last year sent a Yellow-rumped Finch to the

Crystal Palace Show, where it was believed to be a "hybrid" and received only second prize. The same bird was again exhibited, but at the Great National Show, where this time its rarity was recognized by being awarded the special prize for the rarest bird in the show, besides gaining first prize in its class.

\* \* \*

THE BOURKE GRASS-PARRAKEET.—The Rev. H. D. Astley, M.B.O.U., with a coloured figure and an article on this lovely Australian Parrakeet (*Neophema bourkei*), occupies the first place in *The Avicultural Magazine* for June. Judging by the Bourke Grass-Parrakeet in captivity, Mr. Astley believes it is more closely related to the Warbling Grass-Parrakeet or "Budgerigar" (*Melopsittacus undulatus*) than it is to any member of its genus (*Neophema*). The male has quite the pretty warbling song resembling that of the "Budgerigar," but softer, with no shrill interludes, and the call-note is also like the "Budgerigar's," but also softer. Mr. Astley states that the forehead of the male is blue, while the female has no blue, but a very narrow whitish band over the cere. She is also distinguished from her mate by the lacing on the wings being much less defined. A small consignment of these rare roseate-breasted little Parrakeets recently reached Adelaide from the interior.

\* \* \*

THE BARRED-RUMPED GODWIT.—Professor Herm. Johansen, of the University of Tomsk, met with this species on a trip to the Kulunda Steppe, Western Siberia, in the summer of 1902. He writes in the Sept.-Dec., 1904, issue of the *Ornithologisches Jahrbuch*:—"The material obtained on our first excursions yielded an important result for the knowledge of geographical distribution. *Limosa nova-zealandic* (Gray) till now known as breeding on the tundras of Eastern Siberia, and visiting as a migratory species the western shores of the Pacific Ocean as far as Australia and New Zealand, turns out to be breeding near the Obi in 53½ N. lat. in Western Siberia. How little have the limits of the breeding places of our birds been explored, and how many gaps there are still to be filled!"

\* \* \*

BIRDS OF N.-W. AUSTRALIA.—It is noted from *The Ibis* (April, 1905) that the list of birds obtained by Mr. J. S. Tunney for the Tring Museum in North-West Australia and Arnheim Land contains 221 species and sub-species, of which the following are said to be new:—*Collyriocinclu woodwardi*, *Cracticus quoyi tunneyi*, *Gymnorhina tibicen longirostris*, *Paculodryas cinereiceps*, and *Myzomela obscura griseescens*. It would therefore appear that, in spite of all the "immigration restriction," trinomial nomenclature has got into Australia after all! The

new species are recorded by Dr. E. Hartert in *Novitates Zoologicae*, vol. xii., p. 194 (1905), which is not to hand yet, but it is probable that *Gymnorhina tibicen longirostris* refers to the species described as *G. longirostris* by Mr. A. W. Milligan in *The Emu*, vol. iii., p. 96 (1903).

\* \* \*

SIBERIA.—Mr. R. E. Trebilcock relates his experiences in Northern Siberia in the September issue of *The Geelong Naturalist*. This was the trip which he made with Mr. Robert Hall, F.L.S., two years ago. If the pursuit of ornithology has its delights, it has also its drawbacks: but as a rule memory accentuates the former and obliterates the latter, so that the recollection of one's trips afield usually resolves itself into a series of vistas *couleur de rose*. Not so with Mr. Trebilcock, who has an unkind word to say about Vladivostock mud, Russian post-waggons, rest-houses, mosquitoes, black bread, and moss in turn, and even speaks disrespectfully of the Tundra, that Mecca of the Australian ornithologist. Evidently he does not envy the Limicoline birds their annual visit to those parts. One can only hope that this is not "the real Siberia."

\* \* \*

GOUGH ISLAND.—A paper by Mr. W. E. Clarke in *The Ibis* for April deals with the ornithological results of the visit of the Scottish National Antarctic Expedition to Gough Island in the South Atlantic. This is a small, uninhabited, once volcanic island, lying 1,500 miles south-west of the Cape of Good of Hope and 2,000 miles north-east of Cape Horn. The avifauna of the island stands at 23 species, of which only three are terrestrial forms (two Buntings and a Gallinule). Its interest for Australian ornithologists lies in the fact that of the wide-ranging oceanic species which visit our coasts no less than 16 are found there—namely, *Anous stolidus*, *Megalestris antarctica*, *Oceanites oceanicus*, *Cymodroma grallaria*, *Puffinus assimilis*, *Puffinus cinereus*, *Majaqucus equinoctialis*, *Ustrelata mollis*, *Ustrelata lessoni*, *Ossifraga gigantea*, *Prion vittatus*, *P. desolatus*, *Pelecanoides urinatrix*, *Diomedea exulans*, *D. melanophrys*, and *Phaethria fuliginosa*. Singularly enough, the photos. of Gough Island scenery which accompany the article distinctly suggest the wilder parts of the southern coast of Australia.

\* \* \*

AN ISLAND OUTING.—The first article in the September-October number of *The Condor* is a very interesting account by W. L. Finley of a visit to Three-arch Rocks, on the coast of Oregon. The difficulties of landing and camping on the

precipitous cliffs were met and overcome with true American ingenuity and energy, and plenty of sea-bird life was found to reward the enthusiastic naturalists. "At the last gleam of daylight, the Petrels swept in upon the island like a swarm of bats. Those in the burrows came chittering out to meet them. The ground beneath seemed full of squeakings and the air of soft twitterings and whistlings, until it felt uncanny. We frequently felt the breath of swift wings, but it was all like a phantasy, for not a bird could be seen, not even a shadow. How in the world a Petrel could find his own home and his mate in a whole acre of nesting-holes, hidden all about in the grass, and in the darkness of the night, is more than I could understand." At once one thinks of a companion picture—the nightly returning of the Mutton-Birds to the lonely islands in Bass Strait.

\* \* \*

KIWIS.—Dealing with additions to the Zoological Society's Gardens, *The Zoologist* for July says:—"The important addition to the collection of birds is a series of 11 Kiwis, representing the North Island race of the original species—namely, *Apteryx australis mantelli*, or Mantell's Kiwi. The Society has to thank Lord Ranfurly, the Government of New Zealand, and Mr. H. C. Wilkie, F.Z.S., for the donation, and the latter also for his great care of the birds upon the long voyage home. It is certain that no such series of Kiwis has ever previously been exhibited in any European menagerie. Antipodean birds usually do well in England. Hence it is to be hoped that this morphologically isolated type will be for many years represented in the Gardens." An exceedingly interesting notice also appears in *The Agricultural Magazine* (Aug.) anent the introduction of these Kiwis. The writer ("D. S.-S.") truly states very little is known of the nesting habits of these remarkable birds. The period of incubation is also quite unknown.

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A NEW GRASS-FINCH.—From *The Proceedings of the Linnean Society of N.S.W.* (1905, part 1, page 101), is taken the following:—"Mr. North exhibited a specimen of Grass-Finch from the Northern Territory of South Australia which he had separated from *Poephila acuticauda*, Gould, under the name of *Poephila aurantiirostris*. Some time ago he had found that it had been previously described by Dr. O. Heinroth\* from living examples in the Berlin Zoological Gardens, under the name of *Poephila hecki*, but this was the first opportunity he had had of bringing it under the notice of members of the Society. *P. aurantiirostris*, North, thus becomes a synonym of *Poephila*

\* *Ornitholog. Monatsb. Jahrg.*, viii., p. 22 (1900).

*lucki*, Heinroth. The part of Australia from which the birds were procured was not known to Dr. Heinroth. The present specimen, Mr. North was informed by Mr. Percy Peir, was caught with others, also masked Grass-Finches (*Poephila personata*, Gould) a few miles from Burrundie, Port Darwin district. Mr. North had seen many living examples from the same district, also from the neighbourhood of Wyndham, North-Western Australia."

\* \* \*

CUCKOOS.—Observations on the European Cuckoo, by Mr. J. H. Gurney, appear in *The Zoologist* for May. The egg was found in a nest with Accentor's eggs on 22nd May. On 31st May an Accentor's egg was hatched, but shell and young disappeared. The Cuckoo's egg and the other two eggs hatched 2nd June. On 3rd June both young Accentors lay dead on the edge of the nest, which the young Cuckoo occupied alone. By way of experiment, a young Wren was put into the nest several times, and always ejected until the 5th June, when the desire for ejecting other nestlings apparently ceased. The back cavity had disappeared by the 6th June. The dead Accentors disappeared on the 9th, and an old Cuckoo appeared near the nest. The young Cuckoo left the nest on the 22nd. In the June number of the same magazine Mr. W. W. Flemyng describes how an acquaintance of his saw a Cuckoo lay its egg on the ground a few yards away from a Titlark's nest with three eggs, to which it then carried its own egg in its bill. When it left the nest it had one of the Titlark's eggs in its bill, and this it placed on the ground near the nest, broken in two.

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THE September-October issue of *Bird-Lore* is described as a "Winter-Feeding Number," and contains articles and notes that show what may be done to save small birds from starvation when the ground is covered with snow—a condition that is fortunately so rare and local with us that the subject has merely an exotic interest. A strange people, the Americans. Here are two paragraphs from the same issue of this paper:—

"One committee devotes itself to obtaining bird food, and money to buy food, and sometimes calls to its assistance such available outsiders as may be able to help. There are very few people in any American town who will refuse to help such work along in one way or another, if the matter is brought directly to their attention in the proper way."

"At Wrightsville Beach, North Carolina, a great number of these migrating birds (Purple Martins) gathered the past summer (1905), and chose as their nightly roosting place the grove of a summer hotel. The proprietor, wishing to rid himself



of them, invited a number of his neighbours, who, lying in wait for the birds, fired into the trees, and continued to shoot until the ground was literally covered with the dead and dying birds, and for days after wounded Martins could be found fluttering about the neighbouring lawns and roadsides. Estimates of the number of birds killed vary from 8,000 to 15,000."

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IRREGULAR INCUBATION OF OWLS' EGGS.—Herr Ludwig Schuster writes on this subject in the *Ornithologisches Jahrbuch*, January-April, 1904. The general rule among birds is, he says, that incubation does not commence till the clutch of eggs is completed. The Owls form an exception. Their eggs are laid at intervals of two or three days, but the female begins to sit as soon as the first (or perhaps the second) egg is laid. This irregular incubation occurs with every species of Owl, and seems to be the rule with several of them. Why is this the case? It has been suggested that it is to prevent the first-laid eggs being injured by cold. But the writer points out that other birds which lay at a cold season of the year do not have this peculiarity. It is not certain as yet, he says, whether it is intended to counteract some deleterious influence, but it is certain that the fact that its young become fledged at different times is no disadvantage to the Owl. For Owls are conservative, and keep to the same spot practically all the year round, so that it does not make any difference if two young are still in the nest while two more are sitting in neighbouring trees and being fed there, and the eldest couple are already flying afield with their parents and learning how to get their own food. The wants of all can be attended to. The mother's having to leave half-hatched eggs to get feed for the first-hatched young does not interfere with the eggs' chances, for the young in the nest keep the eggs warm.

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JOURNAL OF THE SOUTH AFRICAN ORNITHOLOGISTS' UNION.—This newly-formed Union is not only to be congratulated on its first publication, but on the possession of a membership which contains the names of many of the leading men of South Africa. Mr. W. L. Selater, M.A., F.Z.S., M.B.O.U., is president, and the management of the *Journal* is in the hands of a committee of three, with Mr. J. S. Bucknill, M.A., as head. Part i. of vol. 1 (July, 1905) contains the president's address, in which, after regretting the backward state of ornithological knowledge in South Africa, he gives a succinct account of what has been done in this matter in other parts of the world. But the main part of the paper deals with "South African Ornithologists," giving most interesting particulars regarding Le Vaillant,

Burchell, Sir Andrew Smith, Anderson, and Layard, as well as enumerating many other workers in the cause. There are several valuable papers in the *Journal*, including one by Major Richard Sparrow, M.B.O.U., on the nesting habits of certain South African birds; some notes by Mr. F. J. Ellemor on the nesting habits of the Red Widow-Bird; a list of birds collected and observed round Hanover, Cape Colony, by Mr. Guy C. Shortbridge, and a good account of a visit to a colony of *Ibis æthiopica* by Mr. Austin Roberts. The magazine is conducted on the lines of *The Ibis*, and includes four good photo. prints—"Nest of the Lesser Puff-back Shrike," "Nest of Smith's Weaver-Bird," "Nest of Cape Flycatcher," and one of the "Nest of the Red Widow-Bird."

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SPECIES AND SUB-SPECIES.—In *The Auk* for October there is reviewed a paper by Dr. H. L. Clark on "The Limits of Difference in Specific and Sub-specific Distinctions." Dr. Clark's six "fundamental rules" are worth quoting. They are:—

1. Characters which are not sufficiently conspicuous, so that they can be stated in language or figures of some sort, ought not to be made the basis of a new name.
2. Differences in dimensions of less than 5 per cent. ought not to be made the basis of a new name.
3. Characters which cannot be recognised without knowledge of the geographical origin of the specimen ought not to be made the basis of a new name.
4. Characters which will not distinguish corresponding ages or sexes of two forms ought not to be made the basis of a new name.
5. Characters which are notoriously variable in a given group ought not, within that group, to be made the basis of a new name.
6. Characters which may be fairly interpreted either as individual peculiarities or as dichromatic diversity ought not to be made the basis of a new name.

*The Auk's* reviewer, Dr. J. A. Allen, criticises these rules as representing a purely "lay" standpoint (Dr. Clark being an expert in echinoderms, but not in birds). But Dr. Allen's reasons why some of them—especially Nos. 1 and 2—should not be applied are logically unconvincing, and to any reader of the American bird magazines it is apparent that some such restrictive rules are rapidly becoming necessary, if the word "species" is to have any meaning at all. Most American authorities are endeavouring to simplify nomenclature and to reduce the number of sub-species by a process of elimination.

GENERIC NAME-CHANGES.—The same number notices H. C. Oberholser's "Notes on the Nomenclature of Certain Genera of Birds." *Dromæus* (Vieillot) is shown to be properly *Dromiceius*, the form first used by Vieillot, who did not use *Dromæus*; "*Nanodes* (V. and H.) being preoccupied, a substitute is found in *Euphema* (Wagler)."

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PRIORITY IN NOMENCLATURE.—Discussing the "Rules of Zoological Nomenclature," drawn up by Messrs. Blanchard, von Maehrenthal, and Stiles, and published this year in Paris, *The Ibis* deprecates the present universal deference to the law of priority, and gives three cases where it should not be adhered to, viz.—(1) Where the earlier name violates the rules of Latin grammar; (2) where the earlier name is obviously incorrect, such as the specific name "*capensis*" as applied to a South American bird (no "capes" in South America?); and (3) where the specific name has subsequently become generic as well—instance, the English Magpie, which under the reign of the sub-species and the law of priority becomes *Pica pica pica*. The last does seem absurd; but Australians are a people economic of exertion, and if we have to rename our type Magpie on the same lines he will probably become *Gymnorhina*<sup>3</sup>, while a new Honey-eater recently observed on Kangaroo Island by the expedition of the Aust. O.U. would rejoice in the name of *Melithreptus brevirostris magnirostris*—a contradiction in specific terms. "It is far better," says *The Ibis*, "to throw 'priority' aside in such cases, and to employ the next earliest name, as enacted in the original Stricklandian code."

Among the papers read before the F.N.C. of Victoria on 11th December was one by Mr. T. S. Hall, M.A., on "New Rules of Zoological Nomenclature." This dealt concisely with the complicated (virtually abnormal) phases of the question—the difficulty arising from the same name being applied to plant, animal, or bird, and the author evidently had a leaning to the often-expressed idea that all names of sub-species, species, or genus be submitted to the revision of a competent committee.

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AUSTRALIAN QUAILS BREEDING IN ENGLAND.—Mr. D. Seth-Smith, F.Z.S., succeeded in getting the Painted Quail (*Turnix varia*) to breed in his aviary, and contributes an interesting article on the same in *The Avicultural Magazine* for August last. In March he purchased a pair of birds fresh from Australia. They soon became tame. Early in May the coo-like note of the female was frequently heard, and Mr. Seth-Smith recorded in his diary:—"Noticed the female display to

the male by running backwards and forwards in front of him with tail erect and crop puffed out like a Pouter Pigeon, and discovered a neat, round hole, evidently intended for a nest, formed in some hay and moss behind a few sticks in corner of aviary." The two following days the female spent a good deal of time in the nest, constantly calling to her mate. Mr. Seth-Smith goes on to record for 17th May—"The female constantly 'booming' and displaying to her mate, the display, as a rule, being performed thus:—The male squats amongst the grass, and the female runs round him in a circle with tail more or less erected and crop extended and carried close to the ground. Having run round him once or twice, she stands facing him at a distance of perhaps a foot or eighteen inches, and commences 'booming' or 'cooing' to him like a cock Pigeon, at the same time stamping and scratching with her feet, while the male responds with a faint clucking note." On the 20th the nest was completed, and on the following five days an egg was laid. Surely *five* eggs is a record clutch for this Australian bird. When the fifth egg was deposited the male commenced to sit properly. Incubation was complete in thirteen days, when the male left the nest with three chicks. The female took no notice of the young. In about ten days, or when the young were able to fly, they took everything from the bill of the male, and when sixteen days old were capable of an independent existence. Mr. Seth-Smith's conclusion, after careful observations, is that this species is polyandrous, the female pairing successively with several males during the breeding season. And, again reversing the usual order of things, when she finds a good grub or tit-bit she holds it in her bill and calling presents it to her mate. Mr. Seth-Smith certainly scores off Australians by informing them of these interesting traits in their own birds. Painted Quails have been fairly plentiful near Melbourne lately. A nest containing four eggs was discovered in a garden at Hawthorn, but the gardener mowing the grass too near caused the nest to be deserted. Another nest was observed in the tea-tree at Black Rock. The young were hatched, and were seen following their parents through the scrub.

With the pair of Painted Quails Mr. Seth-Smith also purchased a pair of Swamp or Brown Quails (*Synacus australis*), and was equally successful in getting them to breed. He furnishes a short article on the subject in *The Agricultural Magazine* for October. When the Brown Quails were first let loose in the aviary, as is their nature, they were extremely shy. Towards the end of May and the beginning of June several eggs were laid about the floor of the aviary. These were gathered and placed in what appeared to be the selected nest—merely the usual slight hollow, lined with a few grass stems, in herbage. On 16th June the female commenced to sit on nine eggs. On

the 6th July the male joined the female on the nest, and later in the day the parents emerged with a brood of seven chicks. The young grew apace, and were able to fly in about 10 days. During incubation the male was rarely far from the nest, and whenever the hen came off to feed he would join her and offer her any delicate morsel he chanced to find. Here in Australia those observers who keep Brown Quails in captivity find the male occasionally becomes very excited when his mate leaves the nest, and often beats her most shamefully. The writer recollects an instance in his own aviary, where the female was treated so shamefully that she finally deserted her clutch and sought refuge in the thick branches of a tree.

While on the subject of Quails, the Director of the Zoological Gardens (Mr. D. Le Souéf) informs us that Stubble Quails (*Coturnix pectoralis*) have been nesting freely round Melbourne this season, and many nests have been discovered during the cutting of crops. At the Gardens both eggs and young were found. Some of the former were placed in an incubator and hatched, while the young birds captured are being successfully reared.

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ORNITHOLOGY AND CIVILIZATION.—From the introduction to an article on the breeding place of the Black-tailed Gœurt and Black Stork, which Herr F. Lindner contributes to the January-April (1904) number of the *Ornithologisches Jahrbuch*, we take the following, which is not without its lessons for us:—"The study of ornithology is becoming yearly more difficult. Certainly, ornithological literature has latterly been increasing enormously in volume. Beside a great number of books and booklets, well-intentioned, but for the most part not owing their appearance to any pressing necessity for it, we are blessed to-day with so many periodicals that only people with plenty of time and money can read them all. Undoubtedly if there were fewer it would be better. There is a large over-production in the domain of ornithological publications, and one has to buy much chaff with the corn, much that is valueless and superfluous with the useful and interesting. The incurable splitting-up that is always being cheerfully carried on through incessant founding of special journals and club-organs has, as a natural reverse side, for its inevitable consequence the lowering and impoverishment of their contents, and tends to the useless squandering of strength, time, and money in ornithological pursuits. 'Not many things, but much!' An ornithologist with an itch for writing loses himself to-day in diffuseness, in trivialities, and matters beside the subject, whereas the 'old masters' of the classical period of ornithology, with all their painstaking keenness in the observa-

tion of particular facts, only presented to the reader what was necessary to the matter in hand and publications of enduring value. Certainly, it was easier for them to do great things than it is for our generation. They could still draw from a full well; in their times it was in many respects easier than it is now to gain for oneself a rich ornithological experience, a comprehensive knowledge founded on original observation, to be passed on to others through the medium of publication. At that time the prevailing conditions were very different, and incomparably more favourable to ornithological studies than those existing to-day. Civilization has advanced at the expense of wild life, and in the first degree of that bird-life which was formerly so rich. The last few decades have brought about a rapid decrease in the numbers of species and individuals of the bird-world in many parts of Central Europe. The dense quick-set hedges on the borders of fields and hills have been uprooted, and replaced in gardens by lattice-work or wire fences. Bush and thick underwood has been cut down, hollow trees in woods are tolerated no longer by modern forestry, every strip of arable land that could be cultivated has been put under the plough. In this way many small birds, hollow-breeders, and desert-loving species lose protection and the chance to nest, become rarer, and finally disappear altogether from the neighbourhoods where such alterations as indicated prejudice their remaining. Artificial nest-boxes offer, it is true, some compensation, but in the first place they are not nearly widely enough used, and in the second they cannot be a real and complete substitute for every kind of oppressed hole-breeding bird for the natural breeding places that have been taken from them. But the birds of the swamp, with all their interest for the observer, are in the worst case of all. That great predatory animal, *Homo sapiens* by name, robs them of one territory after another, with dire consequences. Swamps and morasses are drained, or, as lately in Mecklenburg, are turned into huge fish-hatcheries. In Germany there are now only a few places—as Schlesien, Brandenburg, East and West Prussia, Mecklenburg, Schleswig-Holstein, and North Hanover—where rich and little-disturbed swamp-bird life may be observed in its natural state, apart from the shore and banks of the sea lakes and rivers, where at the seasons of migration water-birds show up more or less regularly on their passage through. We read with sorrowful envy to-day the old descriptions of golden conditions which then so many parts of Germany, long since put under cultivation, could show in this respect. We are filled with deep regret on the one side by the brutal system of plunder which is put into operation against water-birds (especially the persecution of Herons), and on the other by the swift-advancing reclamation of swamp lands even in countries such as Hungary, which right up to the most

recent times could be looked on as the Eldorado of the graceful and beautiful birds of the marsh."

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NEW SOUTH WALES BIRD LAWS.—Important additional protection is given to the native birds of New South Wales by notices recently published in the *Government Gazette* of that State (31st October, 1905, pp. 7,246 and 7,247). Under the *Birds Protection Act* 1901 the close season for birds mentioned in the schedule to the Act lasts from 1st August to 31st January (Quail, 1st October to 31st March), but no species were protected all the year round. Furthermore, the schedule was as it originally stood very inadequate, seeing that it omitted numbers of useful insectivorous birds. However, the Act gives the Colonial Secretary power to add to the schedule and vary the close season, while the *Native Animals Protection Act* 1903 enables him in certain cases to create a period of absolute protection, and the notifications now referred to are made under those two Acts. Seventy-two species have been added to the schedule. One hundred and three species are to be absolutely protected for ten years from the 31st October, 1905. The present state of native bird protection in New South Wales may consequently be summed up as follows:—

1. Sea-Eagles (*Haliaeetus*), Ospreys, Native Companions, Emus, Gulls, Landrail, Plovers, Dollar-Birds, Wood-Swallows, Emu-Wrens, Diamond Sparrows (*Steganopleura guttata*), Butcher-Birds (*Cracticus torquatus*) Coachwhip-Birds, Honey-sucker (*Meliornis*), Mocking-Bird (*Acellobia mellivora*), Swamp Pheasants (?), and Struthideas are protected from 1st August to 31st January in each year.

2. Practically all other insectivorous birds, with a few others, are absolutely protected all the year round until 1915. Prominent in this class appear the Regent-Bird, Rifle-Bird, Pitta, all three Lyre-Birds, the Laughing Jackass and all Kingfishers, the Gang-Gang and Black Cockatoos, all Owls, the White-bellied Sea-Eagle (*Haliaeetus leucogaster*), Egret (*Herodias timoriensis*), Plumed Egret (*H. plumifera*), all three species of Ibis, the Wonga Pigeon, and the Stone-Plover.

3. Duck, Pigeons, Geese, Bitterns, Brush Turkey (*Talegallus*), Bustard, Dottrel, Painted Snipe, Mallee-Hen, and Black Swan are protected from the 1st July to 31st January in each year. The close season for these birds, which represent what are usually called "game," therefore commences a month earlier than heretofore.

Quail of all kinds are protected from the 1st day of October to the 31st day of March in each year.

These alterations in the law mark a distinct advance in bird

protection in New South Wales, but anomalies remain. Why, it may well be asked, is the Spotted-sided Finch the only Finch to receive any protection, and why does it get so little? Everyone knows that our beautiful native Finches are shipped in thousands to Europe, or to die on the way, and if the rarer species are not to be exterminated this traffic must be controlled, or, better still, stopped altogether. Again, the Acanthizas are to get ten years' absolute protection, while the Emu-Wren and Wood-Swallow have to be content with a close season. The Kestrel might well be included in the protected list, but is not. A distinction is made in the schedule between foreign and Australian birds: it will come as a surprise to the ordinary reader to find the Indian Minah (*Acridotheres tristis*) classed as an Australian species. That occurs in the original schedule, but the additions now made to it are not quite free from elements of confusion. Probably it is the wish to avoid the *cul-de-sac* into which strict adherence to the law of priority would in this instance lead that is responsible for the appearance of the name *Malurus australis* as one of the Blue Wrens. The intention is good, but the result is confusing. Under the original schedule there was a close season for "Blue Wrens: *Malurus cyaneus* and *Malurus lamberti*"—that is to say, the common Blue Wren and the Lambert Wren. Now *Malurus australis* is added to the protected list. If this is the common Blue Wren, it was protected already, and, one would think, all the more effectually for being given the name by which it is usually known. The case is a good example of the confusion that is caused by the present day craze for "priorities" without respect to the claims of usage, and is another proof of the necessity for a thorough revision of nomenclature. When a thoroughly competent committee has dealt with the list no such trouble will be likely to occur, and the opinions of individual observers will only take a place corresponding to what they are worth.

### Obituary Notice.

HUTTON.—On 27th October, at sea, Frederick Wollaston Hutton, F.R.S., in his 69th year.

THE news of the death of Captain Frederick Wollaston Hutton, F.R.S., of New Zealand, will be received with the deepest regret, not only by ornithologists, but by his scientific brethren throughout the world. The sad event was not unexpected by the few who knew how unsatisfactory his health had been of late. It took place on board the steamer *Rimutaka*, off South Africa, whilst, with Mrs. Hutton, he was returning from England, where he had been for the sake of his health.

Captain Hutton had made for himself a distinguished name in



scientific literature. His work was always most reliable, and some of the theories he put forward were a distinct aid to science. It was our fortune to have him as second president of the Australasian Ornithologists' Union, to which position he was elected for the years 1903-4 and 1904-5, in succession to Colonel Legge, who did for the birds of India almost similar work to what Captain Hutton did for those of New Zealand, and, one might almost say, of the Australasian region.

His first important ornithological work was a contribution to *The Ibis* in 1864 on "The Birds Inhabiting the Southern Ocean," which was referred to by Gould in his "Handbook to the Birds of Australia." It is a strange coincidence that the late Captain should have died on the Southern Ocean. Captain Hutton's last bird articles were those he was good enough to write for *The Emu*—namely, "Penguins" (vol. ii., pp. 1-9); "The Cormorants of New Zealand" (vol. iii., pp. 1-8); and his presidential address—"Geographical Origin and Subsequent Development of the Land Birds of New Zealand" (vol. iv., pp. 93-102). The last was a paper which afforded much room for thought.

Captain Hutton was one of the delegates of the A.O.U. at the International Congress of Ornithologists held in London in June. His last letter to Mr. Mattingley was from England, dated 15th June, in which he stated he was unable to attend all the meetings (probably through illness), and that he had left the Union's business in the hands of Mr. F. M. Littler, of Tasmania.

From the obituary notice written for the *Dunedin Evening Star*, 1 11/05, by Dr. Charles Chilton, of the Canterbury Museum, where the late Captain Hutton was Curator, it is learnt that our late president was born in Lincolnshire in 1836, and played many parts, and played them well. When 14 he was a midshipman on a ship trading to Calcutta, but he soon left the sea, and became a student at King's College, London. Before the age of 20 he received a commission in the 23rd Royal Welsh Fusiliers, and soon saw active service in the Crimea, and afterwards in India during the Indian Mutiny, where he was present at the relief of Lucknow, under Sir Colin Campbell, and in other engagements. His bent for science was already showing itself in various ways, and in 1860, on his return to England, he was elected a Fellow of the Geological Society, and gained considerable practical acquaintance with that science. Fortunately for New Zealand, Captain Hutton turned his attention to what was then a new sphere for research, and, retiring from the army, arrived in that colony in 1866. Soon he became attached to the Geological Survey of New Zealand, and commenced a series of researches into New Zealand geology, which lasted, with some breaches of continuity, throughout his life. In 1871 he was appointed Assistant Geologist, and left Auckland

to proceed to Wellington; in 1873 he became Provincial Geologist of Otago, and before long, after going to Dunedin, he, in conjunction with the late Professor Ulrich, published a very important work on the geology of Otago.

The Captain, however, was not a man of one science only, and, during the time he had been in the colony he had been most consistently working on the zoology of New Zealand. As a result, when the position of Provincial Geologist lapsed with the abolition of the provinces, in 1876, he was appointed Professor of Natural Science at the Otago University, and had charge of the Otago Museum, which still contains abundant evidence of the work that he did. About four years afterwards he removed to Christchurch as Professor of Biology at Canterbury College, and soon began to instil into his students some of his own enthusiasm for natural science, as he had already done in Dunedin. Here, while continuing his researches on geological and zoological subjects, he found it necessary, for the sake of his students, to take up the study of botany, and, with his natural clearness of insight and ability to readily grasp the essential details of all scientific subjects, he soon made himself familiar with all necessary details, and a little pamphlet which he published on the structure of the common weed "shepherd's purse" received most favourable notice from *Nature*.

He amply established a claim to be considered a colonist who had contributed more than his share to the welfare of New Zealand. His papers and works deal not only with geology, but also intricate phases of zoology, and they cover practically every class of animal life, from that of mammal to that of protozoa. It is very doubtful if any other New Zealand zoologist will ever be able to cover so wide a field. While we can with truth say that he practically created New Zealand zoology, it is also true that he himself became the zoologist he was as the necessary result of the special needs of New Zealand zoology; he was, in fact, the product of his environment. As the result of his labours, aided to some extent by that of his students and others, whom he started and encouraged in the same task, the preliminary work of naming and classifying the animals of New Zealand has been to a large extent completed, and it is a great satisfaction to all zoologists that he was able, with the assistance of several co-workers, to publish in the early part of 1904 an "Index Faunæ Nova-Zelandiæ"—*i.e.*, a complete list, with references, of all animals hitherto recorded from New Zealand.

Our late president was not content with merely naming and describing new species. He saw clearly that this work, valuable though it was, was only the first step towards the solution of problems presented by the phases of animal life, and these problems he never lost sight of. To the particular problems

relating to the origin of the New Zealand fauna and flora he especially devoted himself, and bringing to bear upon these all his wide knowledge as a zoologist and his experience as a geologist, his contributions to the solution of this complex problem have made his name known throughout the world as a recognized authority on questions of geographical distribution of animals and plants. It was for their bearing on this question that he took such a keen interest in the results of the various Antarctic expeditions that have recently returned from their fields of observation, and even after his arrival in England he contributed an important article to *Nature* on the Antarctic continent.

His grasp of science was not limited even to such matters as these. Hence he attacked even wider questions. One of his very first contributions to scientific literature was a review of Darwin's "Origin of Species" in the *Geologist* in 1861—a review which gained from Darwin an appreciative letter, of which Captain Hutton was justifiably proud; and throughout his career Captain Hutton returned from time to time to the more philosophical questions underlying the whole of natural science. His devotion to these subjects was the key-note to his success. Some of his articles on them were issued a few years ago in book form under the title of "Darwinism and Lamarckism," and a later work "The Lesson of Evolution," contains his presidential address to the Australasian Association at Hobart in 1902, and kindred essays, and attracted much attention, not only from naturalists, but from all thinking men. Another was a work undertaken in conjunction with Mr. James Drummond—"Animals of New Zealand," which, in popular form, dealt with all New Zealand's fauna. No one more deserves a memorial—can he have better ones than his "Index" and the later work?

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### South Australian Ornithological Association.

THE bi-monthly meeting of this Association was held at the residence of Dr. A. M. Morgan, Adelaide, on Friday evening, 8th September, when Mr. F. R. Zietz presided. Mr. M. Symonds Clark noted that he had seen the Blue-bellied Lorikeet (*Trichoglossus novae-hollandiae*) recently in the National Park. Mr. A. H. C. Zietz, F.L.S., reported having identified the Chestnut-bellied Quail (*Excalfactoria lineata*) from Port Victor district, which showed a large range of this northern bird. He had also received notes from Dr. Angove, of Tea-tree Gully, of the finding of the Red-chested Quail (*Turnix pyrrhotorax*) in that locality. Mr. M. Symonds Clark drew attention to an original edition of Capt. Sturt's book, in which was recorded the discovery of the Pink Cockatoo (*Cacatua leadbeateri*), in 1829, when the explorer located the Darling River, and the finding of the "Blue Mountain" Lorikeet in the Wellington Valley in the Blue Mountains, New South Wales, in 1828. Mr. Clark read clippings from *The Register* of 12th August, 1875, giving the list of birds identified by Mr. F. W. Andrews, an ornithologist who accompanied J. W. Lewis's expedition to Lake Eyre

district over 30 years ago, when several new species were discovered. These birds were described and named by John Gould. Mr. J. W. Mellor reported that the Australasian Ornithologists' Union would be holding its annual congress this year in Adelaide, from 11th to 13th October, and following this a working camp-out on Kangaroo Island was being arranged. It was unanimously agreed to assist the Union in every way to make the congress a success. The Wrens and small Grass-Parrakeets were the birds under discussion for the evening, and interesting facts were noted. Mr. E. Ashby showed specimens of the Variegated Wren (*Malurus lamberti*), from New South Wales, Chestnut-shouldered Wren (*M. assimilis*), South Australia, and the Blue-breasted Wren (*M. pulcherrimus*), Western Australia, all of which displayed a somewhat similar form of markings. Mr. A. H. C. Zietz exhibited the Lovely Wren (*M. amabilis*) and a collection of the little Grass-Parrakeets, notably the Elegant (*Neophema elegans*), the Orange-bellied (*N. chrysogastra*), the Blue-winged (*N. venusta*), Pink-bellied (*N. bourkeri*), and the Rock (*N. petrophila*). Capt. S. A. White showed specimens of the Rock-Parrakeet and the Varied Parrakeet (*Psephotus multicolor*), the last-named having been plentiful on Yorke Peninsula until the introduction of poisoned wheat for the Sparrows and rabbits.

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### Bird Observers' Club.

At the joint invitation of the hon. secretary (Mr. F. P. Godfrey) and Mr. Robert Hall, F.L.S., the sixth meeting of the above-mentioned Club was held at Oxford Chambers, Melbourne, on the evening of Wednesday, 30th September. Ten members and one lady associate were present. The existing "game laws" were criticised, and the hon. secretary was directed to communicate with Mr. C. W. Maclean, Chief Inspector of Fisheries, offering the Club's support in carrying out the same. The following papers were read and discussed:—By Mr. A. G. Campbell, on "The Gembrook Trip"; by Mr. E. J. Christian, "The You Yangs Trip." Mr. A. G. Campbell exhibited a series of Larks' skins; Mr. Robt. Hall, photos., &c., and a curious nest of a Restless Fly-catcher; and the hon. secretary a Brown Hawk. Supper was then served, and a vote of thanks to the chairman (Mr. Robert Hall) brought the meeting to a close.

The seventh meeting of the Club was held at the residence of Dr. George Horne, Clifton Hill, on Wednesday, 29th November, at 8 p.m. Ten members and two associates, besides a number of visitors, were present, the host occupying the chair. Mr. Frank Nicholls was elected a member. The only paper read was by Messrs. G. F. Howe and J. A. Ross, entitled "A Whittlesea Outing." Mr. A. G. Campbell exhibited and explained a number of Kangaroo Island birds, some of which were distinctly links between eastern and western forms. Mr. G. E. Shepherd spoke on the nesting habits of the birds of Mornington Peninsula. Mr. D. Le Souëf, C.M.Z.S., mentioned that Quails have been found breeding near Melbourne this season, and exhibited young of Stubble Quail hatched at the Zoological Gardens. Mr. Robt. Hall, F.L.S., commented on the plumage of the Blue Wrens in Miss Bowie's aviaries, a nest of young being exhibited as an illustration. After refreshments a hearty vote of thanks was passed to Dr. and Mrs. Horne and Miss Bowie.

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### Notes and Notices.

BIRD PROTECTION.—At the last meeting (11th December) of the Field Naturalists' Club of Victoria attention was drawn to the proposed excursion, per *Coogee*, to Western Port, Wilson's

Promontory, and some of the islands in Bass Strait. A fear was expressed that the concession to tourists to enter the reserve on the Promontory, which had with difficulty been obtained for the preservation of native fauna and flora, would furnish an opportunity for the destruction of native game. Amongst birds, Black Swans were mentioned, and instances cited that in other places wholesale shooting or deportation of live birds, which, during the moulting season, are virtually helpless, had been carried on to such an extent that these birds were virtually extinct. The meeting agreed unanimously that the Minister be asked to have the close season for Swans extended so as to cover the time during which the birds are moulting.

MR. Ed. Degen has recently left England for Uganda, in company with Prof. Minchin's mission for the further investigation of the "sleeping sickness," which appears to be making great havoc among the natives in certain parts of the Protectorate. He will collect specimens for the British Museum.—*The Ibis* (April).

NATIVE BIRDS PROTECTION ASSOCIATION.—A meeting of the Central Queensland Native Birds Protection Association was held at the Belmore Arms Hotel, Rockhampton, on 28th October. There were present:—Messrs. G. H. Coar (in the chair), F. Futter, R. G. M'Dowall, H. Moran, H. A. Chippendall, W. D. Wentworth, P. Somerset, J. Anderson, H. Lennon, and A. F. Kent (secretary). It was resolved to make every effort to stop shooting during the close season, which would commence on 1st November. All members promised to report any instances that came under their notice, and to make it their business to put down illegal shooting in every way possible. It was decided to make application to the police for instructions to be given to the officers in charge of country districts to enforce the regulations of the *Native Birds Protection Act*. Posters were ordered to be printed and issued to all State schools and country police stations, giving the names of all birds protected during the close season and those protected always. Two new members were elected.—*Morning Bulletin*, Rockhampton.

MR. Edgar F. Stead, as representing New Zealand, has been elected by the Council of the A.O.U. to take the place of the late Capt. Hutton on the Council.

"DICHOTOMOUS KEY TO THE BIRDS OF AUSTRALIA."—As the supply of extra copies is now somewhat limited, in future the price will be two shillings (postage extra) per copy. Applications for same may be made to the hon. secretary A.O.U.

COLOURED FIGURE FUND.—Reference to the balance-sheet will show that this fund is at low ebb. The loss on the

popular lecture during the Sydney session has been regained by Mr. Robt. Hall's lecture at the Adelaide. The hon. treasurer Mr. F. P. Godfrey) desires to acknowledge with thanks the following donations to the fund:—Miss M. Brumby, 5s.; Admiral Bridges, 6s.; Dr. E. A. D'Ombraïn, 5s.; Mr. G. Graham, 5s.; Mr. J. S. Gray, 20s.; Mr. E. J. Howard, 12s.; Mr. T. Iredale, 10s. 6d.; Mr. A. F. Smith, 5s.; Mr. Thos. Tindale, 5s.

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BIG GUN FIRING AND BIRD DESTRUCTION.—The following complaint by "Incubator" appeared in *The Argus* of the 23/11/05:—"On Saturday last I had 100 duck eggs in an incubator: 15 came out, all the rest were tapping and ready. A big gun was fired at Williamstown, causing sudden death to all the tappers. Could not this waste of ammunition be postponed until the season is over, say, end of February?" If the concussion causes such havoc amongst domestic fowls, how will the native birds that breed in the neighbourhood of the coast fare?

### Publications Received.

*Auk*, *The*, XXII., Nos. 3 and 4, July–Oct., 1905.

*Avicultural Magazine*, *The*, N.S., Nos. 7–12, May–Oct., 1905.

*Bayern, Ornithologische Gesellschaft in*, Verhandlungen, IV., 1903.

*Bird-Lore*, VII., Nos. 3–5, May–Oct., 1905.

*Condor*, *The*, VII., Nos. 3–5, May–Oct., 1905.

*Fourth International Congress of Ornithologists*, 1905. (Cambridge University Press.) Pamphlets:—(1) Effects of Insularity (H. Gadow); (2) Leguat's Giant Bird (Alfred Newton); (2) Books, &c., exhibited by permission of committee.

*Geelong Naturalist*, *The*, Second Series, II., No. 1, Sept., 1905.

*Linnean Society of N.S.W.*, Proceedings, XXX., Parts 1, 2 (with Supplement).

*München, Ornithologischer Verein*, Jahresbericht, III., 1901–2.

*Oberholser, Harry C.*, Birds Collected by Dr. W. L. Abbot in the Kilimanjaro Region, East Africa. (Proc. U.S. Nat. Mus., No. 1,411, pp. 823–936.)

*Ornithologisches Jahrbuch*, XV., Nos. 1–6, Jan.–Dec., 1904, and XVI., Nos. 1–4, Jan.–Aug., 1905.

*U.S. Department of Agriculture*. Close Seasons for Game in the United States and Canada, 1905.

*Zoologist*, *The*, Fourth Series, IX., Nos. 101–104, May–Aug., 1905.

# The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. V.]

2ND APRIL, 1906.

[PART 4.

## Visit to an Ibis Rookery.

By DR. E. A. D'OMBRAIN, CASTERTON (V.)

HAVING received news of a large colony of Straw-necked and White Ibises (*Carphibis spinicollis* and *Ibis molucca*) in the full swing of domestic duties, in a large swamp some 28 miles in a westerly direction from Casterton, on Mrs. Mackinnon's station, "Kaladro," I was at once "bitten" with the keenest desire to pay the swamp a visit. I soon secured a chum who knew the tracks across country—Mr. H. Barton, of this town—who, though not himself a collector, was interested in my story of the sight to be seen.

Accordingly, on the last Saturday in November, equipped with gun, camera, and old clothes (for use in the swamp), we started in the early afternoon on our journey, intending to reach "Kaladro" in time—like the sundowners—for the evening meal.

A pair of sturdy horses, that had their own preconceived ideas of doing a long journey, pulled our trap up the steep hill leading from the town, and thence along the coach route to Mt. Gambier. The afternoon was an ideal one for travelling. A cool, light southerly breeze did battle with the decidedly warm rays of the sun—already commencing to throw long shadows—and the result of the conflict meant temperate weather. Added to this was the fact of there being as yet no dust nor flies to worry us. We continue for about 11 miles, passing the picturesque Nine-mile Creek, with its splendid stream of water bubbling and rippling between mossy banks arched over by tea-tree scrub, and concealing many a fine blackfish and spotted trout, with his brown, rounded back, as it flows to empty itself into the River Glenelg, some 2 or 3 miles on our left.

A feature of the landscape just about here is the tall flower-stalks of the yacca grass (*Xanthorrhoea*), which just at present is covered with the white blossoms, that make the stalks look like so many giant candles standing in the scrub.

Soon we turn off the road and follow bush tracks, mostly through low-lying sandy and swampy heath country. The swamps, in most cases, are large and shallow, and invariably of a bright green colour, from the swamp weeds and rushes growing therein. The cattle standing knee-deep in the water, feeding off the lush herbage, lend a picture-like effect, their reflection in any more sparsely-covered patch being distinctly mirrored, completing the idea.

We push on, and at last enter one of the "Kaladbro" paddocks, where we see both the Corella and the Sulphur-crested Cockatoo (*Licmetis nasica* and *Cacatuz galcrita*), in pairs and in small families, screeching and chattering in anxiety over their nesting cares. We now can see the woolshed, and, after skirting a large circular swamp, my chum points out some men in the distance, one of whom he fancies is his friend the manager, Mr. J. Hunt.

As we drive up to the drafting yards his surmise turns out to be correct, for there is Mr. Hunt busy giving delivery of a mob of sheep to a tall, sunburnt drover, who, with dogs and tilt-cart, is ready for the road. After some "parting injunction," Mr. Hunt joins us, and, at his invitation, we "make tracks" for the homestead, "Avenue Bank."

Of course, shearing is in full swing, and it is the manager's busiest time, but when we explain our mission he promises to join our expedition on Sunday morning—an act of self-denial, for he has earned his Sunday rest. After a warm bush welcome from our hostess, Mrs. Hunt, we remove our traces of travel and soon assist in "removing" some food also, the latter with great zest.

A yarn, with pipes going full blast, on the verandah and well-kept buffalo grass lawns—for this garden and grounds would vie with any Toorak one, being laid out by one of Melbourne's foremost gardeners many years ago, and kept in excellent order ever since—we pass the time till someone suggests "a piece of bed," and as we are in for a tiring day on the morrow, at 10 p.m. we retire.

On the following morning at 6 o'clock I am up and out, and climb up the windmill, from the top staging of which one can get a good view of the swamp where we are going to spend such a glorious time.

Briefly, it is an area of many acres, between 300 and 400, covered from edge to edge with rushes varying in height from a foot, at the edges, to 8 to 12 feet in the central portions. One can see what appears to be a clear space in the centre of the swamp, on which the glass shows hundreds of birds, and as there are always some leaving and returning from this place, one can see they are the Ibises, and that they are as busy as bees at the entrance to the hives. Returning to the garden, I note the clear song of the Reed-Warbler (*Acrocephalus australis*). I am allowed to get quite near him as he hops from twig to twig of an apple tree in a sort of restless manner, and I can watch his little throat swelling, and his cap erect, as he keeps up his liquid song, which, though somewhat oft repeated, is very musical, and sounds to my ear like "Choo-choo, wheea-wheea-whee."

Soon after breakfast we harness up, and proceed to the swamp, where we are met by an *employé*, Mr. W. McLennan, of Casterton, who, my friend Barton declares, is as enthusiastic as myself where birds are concerned. Arrived at the opposite side of the swamp from the house—this being the selected point of attack—we soon get into "wading dress" (I might remark it is one not usually depicted in fashion plates), and three of us (Mr. Hunt modestly declining our



invitation to "Come on,") laden with gun, camera, &c., start—rather gingerly, I must admit—into the swamp. McLennan leads the van, as he has been in just recently. Indeed, it was he who informed my mind with tales of the sight he saw.

We are soon over our knees, and the going is decidedly difficult, for occasionally one foot will sink deeply in a hole, and with the other leg pawing in the air to keep balanced, it requires all one's muscular effort to prevent one's taking a seat in the water. Now the rushes grow denser, and soon we hear the voices of many birds ahead of us, calling us and luring us on. We trudge on bravely, each trying with one unoccupied hand to dodge the fierce swamp nettles, scaring now and then a Bald-Coot (*Porphyrio melanonotus*), whose blue and red would be seen for an instant as he flapped screeching away. Nearer and more distinct grow the sounds, and at the same time our noses give us warning that the "rookery" is close at hand. The sounds become more intelligible, and one can hear that the babel is made up of the queer trumpeting notes from thousands of old birds mingled with the shriller squeaks from as many, or more, young ones. After pausing to listen for a few minutes, we cautiously approach to what we think is a safe limit for seeing and not being seen, in case of scaring the birds—a precaution quite unnecessary, as we afterwards find. Parting the rushes on the fringe of the open clearer space, such a sight opens up before us as makes us doubt for the moment its reality.

Extending over an area of some 6 acres, spread in an irregular fashion, is an immense matwork of trampled down rushes, forming platforms, some at the water's edge, others raised several feet and presenting the appearance of tiers. On these platforms, fighting, squawking, bulldging, sitting, feeding young ones, leaving them and returning in an incessant stream and turmoil are thousands of the two species of Ibises.

A few are scared away on our approach, but by far the greater number remain, too busy or indifferent to move. Everywhere one looks are the large and well-made flat rush nests. They are there in thousands, and in them are eggs—eggs in singles, twos, threes, fours; some newly laid, as the whiteness shows, for the eggs are soon covered all over with the swamp-weed stains; others are dirty and far incubated. There are eggs just chipping, eggs with little black head and bill sticking out, eggs just opening in two pieces from which is emerging a chick—everywhere eggs, in all stages, hundreds of dozens of them. The shearers evidently appreciated them, for they collected two kerosene "buckets" full for use in the hut. Young ones are much in evidence, and vary in age from those just hatched and drying in the warm sun to those ready to essay their first flight. Most of the younger ones are banded together into nurseries, consisting of a fairly level meshwork of rushes at the water's edge. On these are 200 to 300 young ones, with several staid-looking keepers or nurses. They are evidently getting their first lessons in learning how to find their food and what to do with it when found, and voracious youngsters they are. These nurseries are

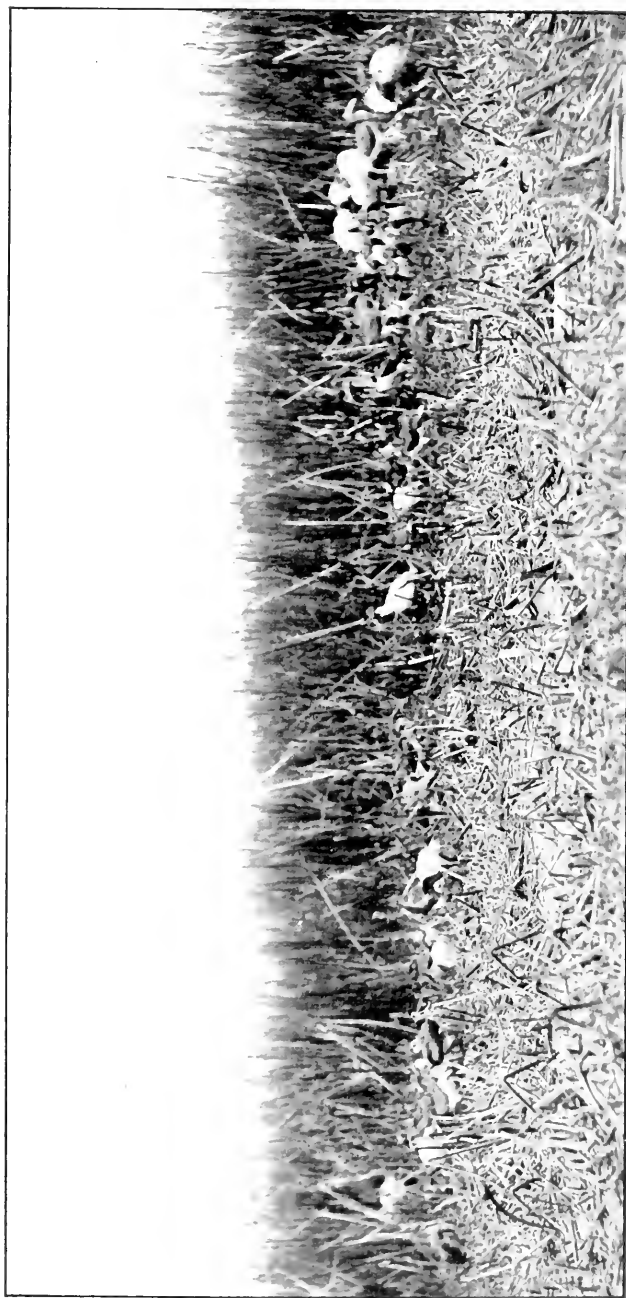
features of the colony, and there appears to be one to every few hundred birds. It is also noted that, whereas the egg platforms vary in height, the nurseries are practically level, and simply a floating basketwork, upon which the birds can run about with great dexterity. (See Plate XIV.)

As we advance we mark the nests of the White and the Straw-necked separately, as, once the birds leave the spot, identification is difficult or impossible.

Now the birds are growing more anxious and alarmed at our presence, and some fly off, but by far the greater number do not move, or rise only to settle in a few yards. One sees many with large wisps of dry swamp-grass and rushes, the former for lining the nests, carrying it home in their long curved bills, generally by a single blade, the remainder hanging in air. The white ones stand out prominently in the bright sunlight, whilst the glossy backs of the Straw-necked shine with a metallic lustre.

Standing admiring the novel sight, our attention is suddenly arrested by the appearance of a tall white bird standing in majestic way on a little rush island. At first it is thought to be an Egret, once plentiful here, but only for a moment, for it raises its head and shows the peculiar spoon-shaped black bill of the Royal Spoonbill (*Platalca regia*). Visions of securing a clutch of eggs are dashed on approaching and finding two newly-hatched young ones. Standing up, with crest erect and mane flowing in the breeze, the bird looked simply regal, the black bill and legs showing in striking contrast to the white purity of the plumage. Another couple is seen, and, although every effort is made to find the nest among the crowds of Ibis nests, we are obliged to confess ourselves beaten. We now proceed to get some photographs, but a quarter-plate camera is lamentably too small to take in the wide expanse of nests and eggs, and, after securing a few pictures, we retrace our way to the trap, and after a change start off for a visit to another swamp where the Yellow-legged Spoonbill (*Platibus flavipes*) and the Little Cormorants (*Phalacrocorax melanoleucus*) breed in company. Arrived at the swamp, we see plenty of nests of each in the trees in the water, and note young Ducks, and disturb a brood of very young Black Swans.

Having determined to secure some good-sized photographs of the Ibises, we return to Casterton. On the following day, having enlisted the services of a photographic enthusiast, I make with him another early start upon our 28-mile drive, well equipped with an 8 x 10 camera and plates. On our way we see plenty of Plover (Spur-winged), Ducks of various kinds, Cranes, Herons, and other aquatic birds and waders. Arriving at the swamp, we soon get into wading clothes, my friend carrying the camera and plates strapped on his back—40 lbs. weight in all. Having reached the fringe of the nesting area we get photographs of the general view, and then of a batch of nests, and one of the groups of young ones, but find that the birds are less tame than before. Finally, we get ready for the *pièce de resistance*—the flight. All being ready,



Young Ibis (on platforms composed of broken rushes, in about three feet of water).

FROM A PHOTO BY W. SCOTT



a shot is fired from the gun. Bang! In a moment there is a wild commotion and the air seems whistling with the sounds of hundreds of thousands of wings cleaving it, and then in one mighty cloud the whole assembly takes flight, making the sky look black and white, and as though it were filled with Harpies or the Sirens of Ulysses, the effect being heightened by the long bills, outstretched necks, and general peculiar appearance of the birds. Now they wheel and swing, and wheel again, gradually rising and soaring, filling the whole sky. Some continue flying and circling round high up, but by far the greater number are too anxious about household cares to keep away, and soon alight, and it is a mystery how they ever find their own again.

To see the birds settle is an interesting sight. With long bill and neck outstretched and lowered, legs drooping in a queer "touch-bottom" sort of way, and much wing-flapping and final balancing on the nest platforms, they settle; and then the squawking, pushing, pecking, and final taking up of positions begins again, and in a little while all is as before.

Standing waist deep in a reedy swamp, we find it no easy matter to secure a firm footing for the camera, but we manage somehow, and after having taken such views as we want we wade out.

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### Some Bird Observations.

BY (DR.) J. BURTON CLELAND, ADELAIDE.

WOOD-SWALLOWS (*Artami*) AND HAWK.—Some years ago, while approaching a thick belt of scrub near Adelaide, we were much struck by the alarm notes of a number of Wood-Swallows, and also by the fact that they were hawking at a higher elevation than usual. At last we discovered the cause of this excitement—a Hawk, perched in one of the trees; and then the object of the manœuvres of the Wood-Swallows became apparent, for as long as they kept in their flight well above the enemy he could not swoop on them and they were safe! The species of Wood-Swallow was, if I remember aright, *A. sordidus*.

SPARROWS AT SEA.—On 8th November, 1905, on board the s.s. *Salamis*, when 200 miles S.W. of C. Otway, from which direction a strong N.E. wind was blowing, several European Sparrows flew on board, apparently not much exhausted. The nearest land might, perhaps, have been a little less than that stated above, but the wind was not blowing directly from it. In Melbourne the day had been very hot. This incident shows how easily distant islands may be populated by means of strong winds of some duration, which do not even approach the force of a hurricane. Doubtless native birds of feeble flight had also been blown away from shore, but had at last succumbed. The course we were pursuing was not in the track of vessels leaving Melbourne

for the Cape, so they could not have reached the open sea by these means.

PTILOTTIS PENICILLATA AND AN ENEMY.—The presence of a bird of prey in the neighbourhood of Honey-eaters of this species is at once notified, as in the case of the Miner (*Manorhina garrula*), by the loud alarm notes they utter. In September, 1895, I found them at fault through a mistake. A great chattering and screeching of "Greenies" was heard, and on going to ascertain the cause found some dozen of them, much excited, flying down on to a low overhanging branch and back again, screaming and fluttering. On the ground just below was the wing of a brown bird, lying flat, which somehow to our eyes suggested a coiled snake or lizard. We believe that the Honey-eaters also supposed it to be of this nature, and were making efforts in their own way to drive it off. Has anyone noticed their behaviour, or that of Miners, towards snakes? Is it possible that, in some of the supposed instances where snakes have "charmed" birds towards them, the real explanation is that the birds have been trying to drive the intruder off and at last have unintentionally approached too near the enemy and so perished?

THE LAUGHING JACKASS (*Dacelo gigas*).—A friend of mine has pointed out an interesting fact in connection with the "laughing" of a pair of Jackasses in his garden. The note, as anyone will remember, consists of two parts—a "chuckle" when the beak is closed and a "laugh" with it open. In watching his birds he has observed that whenever one is "chuckling," if the other joins in it will be with a "laugh;" if the first one changes to a "laugh," the second is straightway heard "chuckling," and so on; but never do both "laugh" at the same time or "chuckle" at the same time.

What is the explanation of the dark brown band that extends backwards behind the eye of the Laughing Jackass? It is of the same width and colour as the eye, and must be surely an attempt to hide the conspicuousness of that organ. The Laughing Jackass, perched on the dead limb of a tree, and fully on the alert for prey, did no such mask as this dark band exist, would show a brilliant and conspicuous eye, that must force itself on the attention of any small reptile or marsupial that might happen to peer forth before leaving its hiding-place. To prevent this and so secure more easily its prey, the eye is rendered much less conspicuous by being placed on a dark background, much in the same way as a man from underneath the shadow of large and over-arching bushy eyebrows can survey his neighbour calmly without unduly attracting his attention. Thus the small animal, the Laughing Jackass's predestined prey, peeping cautiously and curiously around, sees only the broken

base of a decayed limb where should be seen a deadly enemy with piercing eye fixed on him.

THE SOUTHERN STONE-PLOVER (*Burhinus grallarius*).—Some years ago four of these birds made our large garden and its surrounding fields their home. None of them were in any way confined, but wandered perfectly at large. Two were quite wild, attracted to the neighbourhood apparently by the tamer pair. Of the latter, one had apparently been brought up amongst children, for he would follow them about like a dog. Such was his tameness, in fact, that as soon as he saw me approach he would come up and feed out of my hand. Wherever we went, there he would follow us like a dog, even into and through the house as far as the drawingroom, where, if the piano were in use, he would stand beside it and whistle in an excited manner. While we were playing tennis he was always present, and most amusingly dodged the ball when it came in his direction—not infrequently striking his head against the ground in his endeavours to avoid it. We called him “Jip,” and from the way in which, when several of us formed into a line and marched, he would run and “plant” himself ahead of us, keeping about 2 feet in front and uttering a surprised, querying, piping sound, the sobriquet “Piper” was added. If in our march we suddenly wheeled round, he would dart in front and start piping again. Whenever “Jip” heard us whistling he would immediately start doing so too, either in rivalry or for instruction, as much as to say—“This is the proper way to whistle!” The other tame bird almost invariably whistled when “Jip” had done so, but rarely if ever could he be induced to do so by our whistling alone. Neither of these two tame birds ever exhibited in their note the beautiful, soft, sad cadence so characteristic of the wild bird’s whistle; their call ended short of this, and was quicker, merely rising to a height and falling. (I have reason to think that both the tame birds were hens. Is it possible that only the males have the characteristic whistle, and that the two wild birds, being such, had been attracted by the tame females?) All the birds, however, at times made use, especially when flying, of a wild, choppy screech, quite eerie in the dark. I have, at times, heard other wild birds using these unearthly notes, and one instance especially is fixed in my memory. Dog-tired and hungry, at the end of a long and heavy tramp, darkness had overtaken us on an unknown road, when suddenly, as we passed beneath some large, dark trees, wild, hysterical shrieks and yells, rapidly dying away in the distance, rose from the undergrowth beside us. At first, perhaps being overstrung by tiredness, we started, thinking of murder or of a human being in distress, but quickly recognized with relief an unmistakable Stone-Plover’s note throughout the other. One of the wild birds alluded to above

in time became comparatively tame, but still would not allow any close approach. As we came near first the head would be stretched straight out, so that a straight line was made from the tip of the beak to the end of the tail; then he would utter as if were surprised queries; and finally, after several short runs and halts, would fly away. At times these Plovers performed peculiar antics or dances. When in this humour one of the birds would run with outstretched wings about 20 or 30 yards, bending occasionally to this or that side, or even turning suddenly completely round. (Is there any connection between this and, on the one hand, the weird dances of the Native Companion—*Antigone australasiana*—on the other, the peculiar little duck of the head when walking practised by some of the Dottrels and their allies?)

We found, amongst other food, that the birds would eat mice and half-fledged Sparrows. On giving them one of these, the Stone-Plover would take it by the head and give it blows as if to break the bones and render the morsel less bulky, but these efforts seemed too feeble to accomplish much. After some minutes thus spent, the animal would be swallowed whole. We often noticed the tame bird, "Jip," with a clucking sound, picking up small sticks in her bill as if intending to make a nest. This was done at different times of the year, but no such structure was ever formed. One of the others, however, twice laid eggs, placing them, as usual, quite in the open and on the bare ground. Apparently they were not fertilized, as one in the first nest was found broken and rotten, and the two in the second one suddenly disappeared after being incubated for a very long time, the old bird still keeping about. These birds, contrary to the usual habit of wild ones, would not leave their nest until we were quite near it, and then, instead of flying off, would spread their wings and tail like turkey-cocks, utter a harsh note, and bravely attack us. Both sexes assisted in the incubation process.

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### The Coachwhip-Bird.

BY A. H. E. MATTINGLEY.

TRAVELLING along the mountains that traverse the whole of the eastern side of the continent, and are known as the Dividing Range, and its dependent system of hills, one's attention is arrested, as one makes one's way through the thick scrubs in the declivities of this mountain system by the "whip-crack" call of the Coachwhip-Bird (*Psophodes crepitans*). To the native-born Australian accustomed from his infancy to the call of the "Coachwhip," the note loses to some extent its interest, but to the "new chum" travelling through these forests the immediate





Coachwhip-Bird (*Pachyphodes reptans*) and Nest.

FROM A PHOTO BY A. MATTINGLEY.







Nest of the Coachwhip-Bird (*Psophodes crepitans*).

FROM A PHOTO. BY A. MATTINGLEY.

effect of his introduction to the whip-like crack, accidental as it is in most cases, is one of bewildering curiosity, gradually changing into a charmed and interesting feeling as he learns that the sound issues from a bird. He is all the more fascinated when, on closer inspection, he finds that the author of it is a small bird, about 9 inches in length, of greenish-black plumage, showing a mottled white patch on the chest and a white patch on either side of the throat. Surmounting a dark, fairly large, luminous eye, is a dark erectile crest, giving the impression that this bird is both active and alert. Starting with a limpid, long-drawn sound closely resembling the noise produced by the whirling of a whip-lash preparatory to its being swished through the air to terminate in the sharp crack so well known, the male bird gradually merges his voice into the swish of the lash, ending in a loud, sharp crack-like note. The volume of sound produced is so great that it can often be heard a quarter of a mile away, as one sits listening in some quiet fern gully. The call of the male bird is usually, but not always, answered by the female with a two-note call, somewhat softer in tone, and quite separate from the call of the male, although quickly following it, but not in any way blending with it, so much so that a person who has not systematically and carefully studied the call of these birds would not associate the call of the female with that of the male when some distance away. Some ornithologists maintain that the whole of the notes are produced by one bird alone, hence confusion and misunderstanding has arisen. The reason, however, that there is a diversity of opinion on this question is that those who maintain that the whole of the notes are produced by one bird do not in any way associate the answering call of the female with the Coachwhip-Bird. Some persons, in answer to the observers who maintain that two birds make the complete call, even suggest that it may be a case of ventriloquism. The former believe that those who hold that it is made by two birds are attempting to split up the two-note call of the male represented by the whip-crack sound. Hence the following notes, recorded at different dates in my field book, may help to clear up the mystery that veils the call of this interesting bird, although it has been previously recorded that the notes were made by two birds.\*

On 27th November, 1905, I proceeded to Olinda with other members of the Bird Observers' Club to photograph a nest of the Coachwhip that contained two eggs, and also a nest containing two young birds, which scrambled out of the nest, although they could not fly, and made off along the ground directly the vegetation around their nest was handled. The young Coachwhips are the shyest nestlings that I have ever

\* See "Nests and Eggs" (A. J. Campbell).

photographed, and will never remain in the nest if once disturbed; but, contrary to general opinion, I found that during the nesting season the adult birds were exceedingly tractable, so much so that, whilst I was standing in the scrub waiting to take a picture of them feeding their young ones, the parents scratched the ground, in their search for grubs, right at my feet, throwing the leaves and other *débris* over my boots, quite unperturbed at my presence. This has happened on several occasions whilst I have been quietly waiting in a gully trying to obtain photographs of other species of birds. The female Coachwhip invariably feeds the young herself, and collects most of the food supply for them. The male, although he approaches within a few feet of the nest, rarely comes to the young ones unless they have been disturbed and are calling for help, and then he is only with them for a few seconds, taking observations, and making meanwhile that peculiar chuckling note that both the male and female use when communicating with their young ones, and also when searching for food for them in the vicinity of the nest. The female is particularly bold, and has several times perched within a few inches of me as I sat quietly brushing off mosquitoes in the scrub awaiting the opportunity of photographing her attending her nestlings. When she had eyed me from many points of vantage, she decided that I was innocuous, and went on searching for insects. Whilst in such close communion with these birds I made the following notes, which can be verified by those observers who were with me when I took the illustration portrayed. The male makes the whip-crack sound, and is answered by the female, both birds using a two-syllable call. Sometimes, however, the call of the male is not answered by his mate. She sometimes calls first, but is never answered with the whip-crack note of the male. In one instance, at Griffiths' Gully, Dandenong Ranges, on the 21st January this year, a member of the B.O.C. watched the throat of the male, whilst the throat of the female was placed under my observation, at a distance from them of 2 or 3 yards only. In this case the male made the whip-like crack and the female the answer. The male's call, if put into words, would somewhat resemble "We-e-e-whit," the "we-e-e" representing the long-drawn swish of the whip and the "whit" the crack, whilst the female called "Way-we" quickly and sharply. Sometimes I have heard the male make the opening "swish" call and not finish up with the crack, but in this case he was never answered by his mate. Hence my observations indicate that the note of the Coachwhip-Bird is a call to ascertain the locality of its mate, and when the note is not completed it is because either bird has discovered the other's whereabouts. It therefore seems highly improbable that one bird should both call and then answer itself. The young nestlings are as a rule covered with small

lice, which they no doubt get from their parents, which are ground-frequenting birds, and as such liable to be vermin-infested. I recently noticed close by its nest the remains of an adult bird which had evidently been devoured by a fox, and since they build their nests but 2 feet 6 inches to 7 feet from the ground, mostly in "wire-grass," entangled "hickory" scrub, either in its green or dry state, and also in tea-tree and other shrubs, a fox would have no difficulty in catching them. The nest is composed of wire-like grass and rootlets of a chocolate-brown colour generally, strongly though loosely put together in a circular style of architecture, the colour harmonizing with that of the young nestlings. The eggs (two) of the Coachwhip are very beautiful, being of a light bluish or greenish white, moderately blotched and marked with sepia and light grey. Some clutches have, in addition to the blotchings, hieroglyphic-like markings. The diameter of the nest is usually 6 inches, but I have found nests only 4 inches across, containing about half the quantity of material usually comprising their nest, which, when in this condition, may easily be mistaken for a Thickhead's (*Pachycephala*) nest. (See illustration.) The Coachwhip-Bird, of which there are two or three species in Australia, is distributed over both the eastern and western regions. They are local in their habits, rarely venturing more than a few hundred yards from their headquarters. A pair seems to have a definite area, from which they seem to expel intruders of the same species as themselves. Should a person in eastern forests apparently hear two pairs calling in close proximity to one another he will discover on investigation that a Lyre-Bird (*Menura*) is probably mimicking the calls of the Coachwhip. This they do to perfection—in fact, the Lyre-Bird is the leading mimic among the ornithologists of the world.

## Oological Notes and Further Description of New Fruit-Pigeon.

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

PSEUDOGERYGONE BRUNNEIPECTUS (Brown-breasted Fly-cater).

This little-known bird is found farther down the eastern coast than was suspected, its habitat probably extending to the Fitzroy. Mr. E. M. Cornwall lately found it breeding at Mackay, where it appears a common species in the vicinity of mangrove swamps, and from which locality he has enriched my collection with both nest and eggs. He also sent a bird for identification. The first nest was discovered on the 8th October, 1905, and was suspended about 10 feet from the ground in a mangrove. A second nest was taken on the 26th November following, also placed in a mangrove about 5 feet from the ground.

*Nest*.—Very lengthened in form, with hooded side-entrance, and composed chiefly of brownish strips of bark with the addition of a few leaves, &c., and matted with insect cocoons, the inside being lined with finer material and feathers. Total length, 18 inches (thus divided—top portion 7 inches, nest proper 6 inches, and tail 5 inches) by a breadth of  $3\frac{1}{2}$  inches.

*Eggs*.—Clutch, three; oval in shape; texture of shell fine, surface slightly glossy; colour, light pinkish buff, richly spotted and blotched (thickest round the apex) with pinkish-red and purplish-red. These eggs are amongst the most richly coloured of all the known eggs of Australian Fly-catchers. Dimensions in inches:—(1) .7 x .5, (2) .7 x .5, (3) .7 x .5.

#### ACANTHIZA HALMATURINA (Dusky Tit).

This new species was observed by the members of the expedition of the Australasian Ornithologists' Union which recently visited Kangaroo Island, and was described by Mr. A. G. Campbell in the last number of *The Emu* (vol. v., p. 141).

*Nest*.—Resembles that of the Little Brown Tit (*A. pusilla*), but is more heavily built. One nest noticed was placed about a foot from the ground in a small bush on the heath lands. Another was observed about 3 feet from the ground in a short prickly acacia near the coast.

*Eggs*.—Clutch, three; oval in shape; texture of shell fine, surface glossy; colour, pearly-white, with blotches of rufous-red round the apex, and sparingly spotted with the same colour over the rest of the surface. Dimensions in inches:—(1) .7 x .52, (2) .7 x .52, (3) .67 x .5. Amongst the largest of *Acanthiza* eggs.

#### PORZANA FLUMINEA (Spotted Crake).

Mr. John G. Gray, (Kentucky, New South Wales), reports finding a nest of this Crake, hitherto unknown, in a small swamp on his run. The swamp was nearly dry on the 18th December, 1905, when the nest was discovered. The nest was about 6 inches from the water, in a knot of rushes, some of the rushes being interlaced over the nest. There was no staging to the nest. The clutch was four, with the small ends of the eggs placed downwards. The eggs were more greenish in tone and more finely marked than the two types described in "Nests and Eggs," p. 745. Dimensions in inches:—(1) 1.25 x .91, (2) 1.25 x .82, (3) 1.22 x .89, (4) 1.17 x .88.

#### CUCKOOS.

At a meeting of the Bird Observers' Club held on the 14th February, Mr. Septimus Robinson, Bathurst (New South Wales), exhibited a fine collection of 46 Cuckoos' eggs, with the respective eggs of the foster-parents. One remarkable feature was that there were no single eggs of foster-parents—all full clutches, two to four eggs, as the case may be. In all instances



the colouration of the strange egg did not harmonize with those of the foster-parent, but were beautiful contrasts. For instances, the red-speckled egg of the Narrow-billed Bronze-Cuckoo with the bluish-green eggs of the Grass-Warbler; the same Cuckoo's egg with a plain white set of the Red-browed Finch; the flesh-coloured egg of the Pallid Cuckoo with the greenish egg of the Hooded Robin, or with the light olive clutch of the Rufus-breasted Thickhead.

In the collection the following foster-parents are not recorded in my work, "Nests and Eggs," namely:—

For the Pallid Cuckoo (*Cuculus pallidus*)—

Fulvous-fronted Honey-eater (*Glycyphula fulvifrons*).\*

Yellow-throated Miner (*Myzantha flavivula*).\*

For the Fan-tailed Cuckoo (*Cacomantis flabelliformis*)—

Yellow-throated Scrub-Wren (*Sericornis citreogularis*).

Yellow-faced Honey-eater (*Ptilotis chrysops*).

For the Square-tailed Cuckoo (*Cacomantis variolosus*)—

Large-billed Fly-eater (*Pseudogerygone magnirostris*).

For the Narrow-billed Bronze-Cuckoo (*Chalcococcyx basalis*)—

White-throated Fly-eater (*Gerygone albigularis*).

Chestnut-rumped Tit (*Acanthiza uropygialis*).

Orange-fronted Bush-Chat (*Ephthianura aurifrons*).

Black Honey-eater (*Myzomela nigra*).

Yellow-faced Honey-eater (*Ptilotis chrysops*).

Three clutches—namely, Blue Wren (*Malurus cyaneus*), White-shafted Fantail (*Rhipidura albiscapa*), and Brown Flycatcher (*Micropus fascians*)—were each accompanied by an egg of a Cuckoo, which, if not referable to the Square-tailed Cuckoo (*C. variolosus*), is unknown to me. They are smaller in size and lighter in colour than typical eggs of the Square-tailed Cuckoo, and may be described thus:—Short oval in shape; texture of shell fine; surface glossy and pure white in colour, with a few sepia or dark brown spots about the upper quarter. Dimensions in inches:—(1) .67 x .49, (2) .65 x .5, (3) .74 x .52.

The date on the Blue Wren's set was 29/1/00, that of the Brown Fly-catcher 20/2/01, while no date is furnished with the White-shafted Fantail's.

While on the subject of Cuckoos, it is of interest to record that there are in the collection of Colonel C. S. Ryan two eggs apparently belonging to the Black-eared Cuckoo (*Mesocalinus palliolatus*), taken this season with sets of the Little Field-Wren (*Chthonicola sagittata*), near Dandenong Creek, Victoria. It is somewhat remarkable to find this interior Cuckoo wandering so far south. But the variable seasons of late have been pushing

\* Both these new foster-parents for the Pallid Cuckoo were first mentioned by Mr. A. J. North in connection with Mr. Leslie M. Moore's collection. See Proc. Linn. Soc. N.S.W., June, '05, meeting.

birds out of their usual tracks. For instance, the Ground-Wren (*Hylacola pyrrhopygia*) has this season been shot in the Dandenong Ranges. The specimen was exhibited at the January meeting of the Field Naturalists' Club of Victoria by Mr. C. French, jun.

ERISMATURA AUSTRALIS (Blue-billed Duck).

As some doubt exists as to the full complement of eggs to a clutch\* laid by this little-known Duck, Mr. J. C. FitzGerald, Neuarcurr, Victoria, has thoughtfully sent me the following note:—"I have a lake at the foot of my garden where Black Duck, Teal, and Mountain-Duck rear a number of clutches every year, their only enemies being Swamp-Hawks (Harriers), which kill a good many of the little ones before they are old enough to look after themselves. Musk-Duck, and occasionally Wood-Duck, also breed here. As I do not permit any shooting on the lake, they are all very tame.

"This year a pair of Blue-billed Ducks appeared, which (thanks to your book) I was able to identify, not having seen the species in this district before. The Duck laid six eggs about 2 feet above the water in the fibrous roots of an osier-willow, and has been sitting about 10 days. She is very tame, and will allow one to approach within a few feet before diving into the water."

Subsequently Mr. FitzGerald wrote regretfully stating that the clutch of the Blue-billed Duck had unfortunately been destroyed. When the eggs were apparently within a few days of being hatched three of them were found broken, while the other three were in the shallow water by the nest unbroken. Mr. FitzGerald thinks the culprit was a Musk-Duck, which was observed always hanging about the nest and annoying the Blue-bills by pursuing them.

PTILOPUS MINUTUS (Small Green Fruit-Pigeon).

Mr. Clifford Coles, taxidermist, &c., Victoria-arcade, Castle-reagh-street, Sydney, writes:—"Referring to the new Fruit-Pigeon mentioned in *The Emu*, vol. v., p. 155, I would like to submit a skin which appears to me like the missing male of the bird in question. I secured it among a lot of North Queensland birds. I regret much to have no information respecting it except that the person from whom I obtained it had been collecting in the Atherton and Cairns districts for several years. The bird was labelled 'Pigeon (male), N.Q.'"

The note and male specimen kindly sent by Mr. Coles are very opportune, coming so soon after Mr. Cornwall's female specimen, and confirm the new species which I ventured to provisionally name *Ptilopus minutus* in the last issue of *The*

\* Gould, 2 to 9 or 10, "Handbook," vol. ii., p. 380; Campbell, 4 or 5, "Nest and Eggs," p. 1052.

*Emu.* Judging by appearance, I should say the bird submitted by Mr. Coles has been skinned for several years—perhaps five.

The skin may be thus described:—*Male*.—General colour, bronze or metallic green; on hind-crown an irregular-edged patch of violet or plum colour, and some of the feathers of the mantle centred with peacock blue; wing coverts and secondaries edged with yellow; primaries dark grey edged with dull or yellowish white; tail, greenish above, greyish underneath, and tipped with dull white. Throat grey, and feathers of the breast tipped or hackled with French grey; greenish feathers of the rest of the under surface slightly tipped with yellow; abdominal patch, which runs into the under tail coverts, yellowish white, some of the tail coverts being edged with green. The thighs are feathered, and the first primary of each wing has a terminal notch or spatule as in the third primary of the Alexandra Parakeet (*Polytelis alexandrae*). Feet yellowish; bill bluish-slate, with a lighter (creamy) tip.

Dimensions in inches:—Length, 8.0; wing, 5.0; tail, 2.75; bill, .49; tarsus, .7.

It will be noticed that the male differs from the female by its slightly larger dimensions, purple hind-cap, hackled breast, abdominal patch more defined, and by the notched first primary.

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## A Psalm of Dawn.

BY A. G. CAMPBELL.

(Read before the Bird Observers' Club, 24th January, 1906.)

AWAY out at the base of the ranges lay a sleeping camp. It nestled in a thick brake of scrub that clung to the track of a small watercourse, still running. The night was clear and warm, with hardly a breath of air to disturb the foliage or drive off the mosquitoes, which were in hundreds. A Boobook Owl had been heard some distance off; the querulous cry of the Little Nightjar had disturbed the silence; now little was audible save the dull gurgling of the creek as it made its tired way over the stones. A solitary Brush Cuckoo whistled once on the hillside. A few cicadas, as if restless in the warm air, sent forth their strumming din into the night with weird effect.

The picture, indeed, was complete of which some poet has sung—

“ The lone owl's hoot,  
The waterfall's faint drip— or insect stir  
Among the emerald leaves— or infant wind  
Rifling the dewy lips of sleeping flowers—  
Alone disturbs the silence of the night ”

Towards morning the wind and the night voices became still.

It was Christmas Day, and all nature seemed hushed in preparation for its welcome. The night crept quickly on, however, to a sleepless watcher, anxious to note the birds and their order of awakening. Before long the first of the dawn was discerned creeping in behind the stars and brightening up the deep blue background in which they lay. Not until it was much lighter, however, did the first bird call.

The Magpie is early, and the Jackass is earlier, but this Christmas morning it was the little White-shafted Fantail that was first to welcome the coming day. At 3.45 it first whistled, and at intervals of a couple of minutes it continued. The Brush Cuckoo, at 4 o'clock, was next. Five minutes later a party of Jackasses burst out rowdily; they soon awakened other families on the adjacent hillside, and, when their laughing had died down, like a far-away echo could be heard yet another party near the top of the range. Then quickly followed the Blue Wren with its merry twitter, the Yellow Robin with its persistent piping note, and the Magpie with its well-known carols. All these birds called and whistled away some little time before a second chorus was begun, about 4.20, by the White-throated Thickhead, the Shrike-Thrush, and the White-eyes.

By 4.30 the dawn psalm was at the best. The Brush Cuckoo, now joined by the Fan-tailed Cuckoo, gave out their sliding and whirring notes with hardly a breathing space, and several White-eyes by the creek kept up a continuous warbling song. This morning song of the White-eye is different to the single call note, and different also to the quiet Thrush-like song which it sometimes gives forth during the heat of the day. It is the call heard as a party of them is flying overhead. When three or four birds keep at this persistently the effect is beautiful indeed.

Last to salute the morn was a Coachwhip, which was known to have taken up his abode in this part of the creek, out a little from the main fern gully, which is always looked upon as its true home. At first he could not get the hen bird to answer his whip-like call with her two little notes (which she usually does so quickly that it is difficult to say the notes do not all come from one bird), so he tried again in a lower, coaxing tone, but she was still asleep or indifferent. Then he tried again in a high, impatient key, and when this time the answer came he was content, and whistled again in the usual tone.

By sunrise at 4.40 all the bird music had subsided, and the birds were busy with their morning meal.

Yet another morning of observation was spent, to see what could be gathered in corroboration of the first notes.

The White-shafted Fantail was again easily first. There were two pairs of these birds about the camp; the nest of one was discovered in a sapling just alongside our kitchen. The sitting

bird occasionally called from the nest, and one morning while we were watching the nest the mate appeared and changed shifts.

It was 3.40 this morning when the Fantail called (5 minutes earlier than before), and the order of the other birds was somewhat different. The Cuckoos, both Brush and Fan-tailed, seemed to have left the hillside (and the Pallid and Bronze took their place later in the day). The Jackasses began just at 4, and woke up most of their forest mates, for the Magpie, Wren, Yellow Robin, Bronze-wing Pigeon, White-throated Thickhead, and White-eared Honey-eater quickly followed. As before, the high society of the Whip-Birds and White-eyes down in the creek were (at 4.20) the last to make themselves heard. But they added greatly to the effect of the morning chorus; the White-eyes especially, with their continuous song, filled the whole air with music.

A difference was observed in the notes of the Yellow Robin. One call is "Whit whit," whistled sharply. The other is a single piping note repeated measuredly. Now, as the former call was heard in the morning some time before the latter, it suggests that one belongs to the male bird and the other to the female, but this needs corroboration. The same notes of the Yellow Robin are again heard late in the afternoon, signalling the night, though usually between morning and afternoon they are silent.

Above all other things in the bush, how beautiful is the birds' psalm of dawn! Many have written of it in far-away moods, but there has yet to arise a naturalist who will set it to words with a true artist's touch. Meanwhile every morning of the year the psalm goes up in light-hearted thankfulness for another day. Each bird, without stirring from the perch where it has passed the night, sits and pours forth its melody for a space, like a grace before meat. Then, when dawn has chiselled out the features of the landscape, and there is light enough, each sets to upon its daily round.

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## Domestic Wild-Cats *v.* Native Birds.

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

(*Read at Adelaide (1905) Session of the A.O.U.*)

BRISBANE, Thursday. In a report to the Gregory North Rabbit Board, the superintendent of works, Mr. F. C. Trotman, stated, in reference to an inspection of portion of the fence, that he was much gratified to find so few traces of *rabbits*. This he attributed to the myriads of wild cats (domesticated breed), which abound all along the line. These were the greatest enemies the *rabbits* had. It was astonishing where the cats came from. He believed they were very numerous on the southern boundary fence, and

if so he hoped they would almost rid the district of *rabbits* in those localities.—*Argus*.

SUBSTITUTE birds for rabbits, and you will agree with me that this is very serious news for bird-lovers.

The cat pest, taken in conjunction with the proper protection of native birds—one of our chief planks—is a question that will sooner or later have to be seriously faced.

What with the recommendations and consideration of "Bird" or "Game Laws," the compilation of an official "Check-List" of Australian birds, &c., our hands are fairly full just now. Nevertheless, some preliminary notice may be taken of the wild-cat pest—*i.e.*, the domestic cat gone wild.

These injurious animals are now practically all over Australia. You find them on the shores prowling about sea-bird rookeries, and in the far interior thriving in rabbit-burrows. They are even to be found numerous upon the islands off the coast. After several generations in the bush-wilds these animals attain an immense size, and become so fierce that they have been known to attack human beings. Now, such great beasts need a quantity of food, and of what does that food chiefly consist? Why, of course, native birds and animals.

How are we to combat this evil? "It is a fine day; let us go out and kill something." That is a Frenchman's view of the chief characteristic of a Britisher. Well, if we must kill something, let us go out and kill cats. I do not mean our hearth-rug pets, but wild domestic cats in the bush. It would be keen sport hunting cats with rifle and dogs—if not too rough on dogs, judging by the size and spitefulness of some of the "Toms" I have encountered. As is done in the case of foxes and wild dogs, let rewards be paid for cat-scalps.

This suggests the ways and means—the only reasonable course being that of a cat-tax. A collection of, say, one shilling per annum from owners of tame domestic cats would yield a sufficient fund to combat and keep in check the wild-cat nuisance in the country, and thus give our beloved birds a chance for existence.

These few hasty thoughts are offered in order to create discussion on a subject which has been uppermost in my mind for some years regarding bird protection. Undoubtedly, if many of our highly interesting and beautiful birds, especially ground-loving species, are to be preserved from total extinction, we must, as a bird-lovers' union, at no distant date face squarely a wild-cat destruction scheme.

[Since the above was read, I find that, according to *The Auk* (January, 1906), an annual meeting of the National Association of Audubon Societies was held at the American Museum of Natural History, in New York City, on the 31st October, 1905. At the afternoon session the principal topic of discussion was cats in relation to bird-protection. At the close of the discussion the following resolution was adopted:—"That, in the interests of humanity and bird-protection, the National Association of Audubon Societies endorses the movement to make the owners of cats responsible for their acts and welfare."—A. J. C.]

## Probable New Bird for Australia.

THROUGH the courtesy of Mr. H. G. Barnard, the editors of *The Emu* have received loose leaflets, presumably from *The Proceedings* of the Linnean Society of N.S.W. (there being no head-lines), giving a description of a probable new and interesting bird for Australia. Mr. Barnard shot the bird at Bimbi, Dawson River district, Queensland, on the 10th June last year. When he first noticed the stranger it was running on the ground like the Pipit (*Anthus australis*). It was the only one he had ever seen, and his attention was attracted to it by its sharp whistling note.

Mr. Barnard, having occasion to forward a parcel of bird-skins to the Australian Museum, Sydney, enclosed the new bird for identification, with the result that Mr. A. J. North, ornithologist of that institution, pronounced it to be a *Motacilla* or Wagtail, an entirely new genus for Australia. The bird appears to be closely allied to European forms (*M. borealis* and *M. cinereicapilla*). The Australian bird, according to Mr. North, is an adult male, in perfect plumage; it has a well-pronounced white superciliary stripe, as is shown in Dr. Bowdler Sharpe's fig. 6 of the head of *M. cinereicapilla* (Cat. Bds. Brit. Mus., vol. x., pl. vii.), but the throat is yellow, not white; the lores and feathers below the eye are black, and a blackish wash extends over the anterior portion of the ear coverts, and the chin is white. On the under parts it resembles fig. 1 on the same plate, *M. borealis*, in having the throat yellow and a blackish narrow band across the fore-neck. Total length, 6.15 inches; wing, 3.08; tail, 2.9; bill, .5; tarsus, .9. Owing to seasonal changes and varying phases of plumage, considerable difference of opinion exists among ornithologists who have made a life-long study of the genus *Motacilla*, as to the validity of certain of its species or sub-species. Should the specimen obtained by Mr. Barnard not be an unusually plumaged visitor or straggler from another clime, and the characters pointed out above, in which it differs from *M. cinereicapilla*, prove constant, Mr. North proposes to designate the new bird under the name of *Motacilla barnardi*, a well-deserved honour for its enthusiastic discoverer.

## Stray Feathers.

GULLS NESTING INLAND.—Silver Gulls have been nesting this season at Enndendale, in the Western District, Victoria, and many miles from the sea coast. The swamp is about half a mile long by a quarter broad. The nests are made on the tussocks, which are rather sparsely spread over nearly the whole of the swamp.—H. QUINEY. Mortlake, Victoria.

SOUTHERN RANGE OF WARBLING GRASS-PARRAKEETS.—Surely it a rare thing to see the little Green Parrakeets, commonly known as “Budgerigars,” in the Western District of Victoria! I saw to-day a flock of about 30 on the Lismore polo ground, flying into a plantation of blue gums.—ERNEST G. AUSTIN. Borriyalloak, 20/1/06.

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FALCONS.—On the 20th February I shot a Black Falcon (*F. subniger*) as it was endeavouring to seize and carry away a wounded Marsh Tringa (*Heteropygia acuminata*) from the ground on a three-chain road that runs through Wyuna estate about 10 miles from here. Is this Falcon common in any part of Victoria? It is the first of its kind I have seen. Driving back we saw a Little Falcon (*F. lunulatus*) dart at express speed through some dead timber, to the usual accompaniment of small birds’ twittering; and nearer home, at Taripta, a Black-cheeked Falcon (*F. melanogenys*) flew out of a box tree alongside the road. Its flight was slow for a Falcon, and yet the wings seemed to beat quickly. This is not a great place for Hawks, and to see three kinds of Falcon in one day is for me at least a “local record.”—C. F. B. Kyabram, 4/3/06.

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A QUEENSLAND BIRD SANCTUARY.—It may interest you to know that since my coming here (seven years ago) the island has been an informal sanctuary for birds; and that this year, on my suggestion, the Government proclaimed it, with two neighbouring groups of islands, a perpetual reserve, shooting being entirely prohibited. I hold the honorary office of ranger. Fifteen islands and islets are included in the reserve, and some of them are favourite haunts of the Torres Strait or Nutmeg-Pigeons, which breed in immense numbers. I believe the islands under my control are the only unmolested breeding-places for this bird on the east coast of Australia. So far I have identified 114 birds native of or visitors to this island, the area of which is only  $3\frac{1}{2}$  square miles, and there are several others I have been unable to name, my works of reference being inadequate.—E. J. BANFIELD. Brammo Bay, Dunk Island, 20/12/05.

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FROLICSOME MUSK-DUCKS.—The Musk-Ducks appear to terrorize all the other Ducks on the lake. They are continually chasing the clutches of young Black Duck and Teal, apparently for sport, as I have never seen them kill one, but they scatter the young flocks far and wide, and so leave them an easy prey to the Brown Hawks before the old birds can collect them. The Musk-Duck will dive about a chain away from the clutch and come up in the middle of them. The old Ducks appear to



be just as alarmed as the young ones. Should a Musk-Duck with her pair of young approach another with young, one has to go, and the young are left to shift for themselves. While the chase goes on—sometimes for a quarter of an hour—one will chase the other at a good pace, flapping along the surface of the water. I have never seen one rise from the water.

As showing how necessary it was to extend the close season, I counted eight clutches in the down of Black Duck and Teal to-day on the lake.—J. C. FITZGERALD. Neuarpuur (Vict.), 29/12/05.

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“WHERE SWALLOWS BUILD.”—I noticed some time ago in *The Emu* a query as to where Swallows built before the advent of Europeans. A pair of Swallows built in a cave in the hills behind Mitcham, S.A. I first remember the nest in 1874 or 1875, and every year since then that I have visited the cave there has been an occupied or recently occupied nest. The last time I visited it was about 5 years ago, when there were young birds in the nest. On Brown Hill Creek, also near Mitcham, there are some cliffs about 20 or 30 feet in height where a few pairs of Swallows built every year. When in the Mt. Gunson district in 1900 I found a Swallow's nest containing two fresh eggs built in the inside of a hollow gum stump; this was about 15 miles from the nearest habitation, and the country is very sparingly inhabited. In 1902, in the Gawler Ranges, about 45 miles west of Port Augusta, where there is a deep gorge, at the back of Corunna H.S., there were about half a dozen Swallows' nests on the precipitous sides of this gorge, some of them of much greater size than usual, and all of them quite white from the droppings of successive generations. All of these situations seem to be natural breeding spots, and have probably been occupied for years before the Europeans built sheds and stables for the Swallow's accommodation.—(DR.) A. M. MORGAN. Adelaide, 23/7/05.

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NOTES ON GYMNORHINA LEUCONOTA.—Some eight years ago a neighbour of mine in the Heytesbury Forest had a tame one-legged Magpie (the other leg having been cut off by a rabbit trap) which he taught to whistle “Merrily danced the Quaker's wife, merrily danced the Quaker,” which she did to perfection. But, yielding to the persuasion of some gallant of her own species, she deserted her home and took to the bush, where she built a nest and reared a family. She most assiduously taught the young birds her own accomplishment, and they all whistled “Merrily danced the Quaker's wife” more or less perfectly. She then disappeared, but succeeding generations of Magpies have retained scraps of the old tune, and there

are many now in the forest who still conclude their beautiful wild notes with the ascending notes which terminate the old air. This being a very late season, I had many opportunities of watching and listening to the young Magpies at school, while the parent birds educated them in their own native notes and the artificial notes of "The Quaker." Indeed, these parent Magpies resembled some human parents in that they seemed to take more pains to teach that which was artificial than to teach the more natural and beautiful notes which are characteristic of this species.—FRANK MADDEN. Melbourne.

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MECHANICAL ADVANTAGES OF THE SHAPE OF SWANS FOR FEEDING.—While watching recently some Swans—two of the domestic White and one Black (*Chenopsis atrata*)—the perfect adaptation of their shape to the method of feeding was strikingly manifest. In shallowish water they will be frequently noticed while thus engaged with the tail projecting vertically and with head and neck stretched downwards to seek the weeds growing on the bottom. It will be seen that this movement from the horizontal is executed with wonderful ease, the whole body swinging round a transverse axis at about the level of the legs and through the centre of gravity. The bases of two cones then meet at this level—one, whose apex is the head, pointing while thus feeding directly downwards, and the other a shorter and more compact cone, whose summit is the tail, looking upwards, and keeping the bird with ease in its apparently awkward position. Then, when the Swan wishes to advance a little, two or three paddles with its webbed feet sends it on the requisite distance. To assume again the erect position, the lower cone is shortened and tilted forwards by raising and bending the neck, with the result that the upper one falls backwards and the bird floats on the surface of the water.—(DR.) J. BURTON CLELAND. Adelaide.

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THE ORIGIN OF THE NAME "PETREL."—On a recent voyage from London to Australia, *via* the Cape, I was much interested in watching the various birds following in the wake of the ship. Amongst these the Petrels, especially the graceful Cape Pigeon (*Daption capensis*), claimed special attention. The movements of this group of birds when flying against a strong head wind with high billows were especially noteworthy. They would skim over the summit of a wave into the trough on the other side, and then apparently *run up* the opposite slope with legs half outstretched, being protected in this situation from the force of the wind. Thinking afterwards of the etymology of the word "Petrel" and its derivation from the Greek *πέτρα*, a rock, I could not at first see why, apart from other sea birds, they specially

deserved the name, not being associated in any particular way with rocks, and spending their time on the face of the waters. Then suddenly it occurred to me that the interesting method of flight I had already observed had struck the fancy of the mariners of old as well, and that they had dedicated the bird to St. Peter, since like him it too seemed to walk on the strong waters. On my return to civilized parts I found, on reference to an encyclopædia, that my surmise was correct, and that Buffon had likewise attributed the name to this origin. It is an interesting point, not only as showing the accurate observation of the old voyagers, but also as emphasizing an important and characteristic trait, illustrating the conservation of energy, in the birds in question.—(DR.) J. BURTON CLELAND.

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BIRDS OF KANGAROO ISLAND.—During the last week of 1897 a friend and myself paid a visit to Kangaroo Island, walking along the north coast from Point Morison to Hog Bay. Unfortunately we experienced during our whole stay one of the severest heat waves felt for some while, which materially hindered collecting. Of the birds encountered I can only add to Mr. A. G. Campbell's list (*Emu*, vol. v., No. 3) the Honey-eater *Ptilotis penicillata*, which my notes say we met with at Queenscliff. I secured a specimen of *Acanthorhynchus halmaturina*, and, noticing points of difference between it and the Adelaide bird, showed it both at the Adelaide Museum and later at the Australian Museum in Sydney, but nothing further came of the inspection. Of *Acanthiza halmaturina* we obtained specimens, and my notes say :—"A little *Acanthiza* inhabiting the trees near the coast at once attracted us by its whistle, the 'swish-swish' note being varied by a low bugle-like sound which gives the bird its vernacular name of 'Trumpeter'—in fact, the first time that I heard it, I thought it must be an imported Goldfinch singing." Of *Pardalotus ornatus* the notes say :—"A pair of these birds had built their nest in a most peculiar position, but so placed as to be out of reach and sight. During our walks we came upon a well and trough on an exceedingly hot day in the midst of dry mallee country about 5 miles from Hog Bay. In the trough an iguana lay immersed up to his neck, apparently on the watch for the numerous small birds which continually flew there to drink. Amongst these the pair of *Pardalotes* were conspicuous, since they bore in their beaks green grasshoppers and other insects nearly half as long as themselves. They would fly on to the rope, hop downwards a little, head foremost and then drop down the well, the upper part of which was brick-lined, but the lower was unprotected and shelved away. From the latter part, on the arrival of the old birds, the cries of the young could be heard. We sat by

the well some time, and the differences in disposition even in wild birds were conspicuous. One with a grasshopper in his beak would hop from twig to twig, fly to the rope, and then go off again, afraid to venture while we were near. The other, however, without the slightest dread, flew straight down and took no notice of us. I took out my watch, and found that the two birds fed their young four times in five minutes; watching them later, however, they did not keep up this rate, but an average of once in that time would be well below the mark. "If this rate were continued for 12 hours, 144 insects would be destroyed—but then what would be the size of the nestlings?"—(DR.) J. BURTON CLELAND. Adelaide.

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CLARKE ISLAND (BASS STRAIT) NOTES.—It is curious to note how erratic birds are laying in various seasons. All those down in the Strait this year are a month later in nesting than their accustomed time. The Black Swan, Musk-Duck, and other water-fowl which almost invariably lay in August, have this year postponed laying until the middle of September, and even later. The winter has been very wet, but that could not affect them in any way. I discovered a Swan's nest amid reeds on the bank of a small creek, in water knee-deep, containing several eggs. Shortly afterwards the creek's mouth broke out, and the water receded to a lower level, leaving the nest dry. The birds at once deserted it.

28/7/05.—The Cape Barren Geese (the exception) were up to their usual time in laying. I visited an adjacent island, and discovered three nests, and noted that some persons had broken one or more eggs from them, with a view, I presume, to see if they were fresh, but finding them hard-set had left the remainder. I made certain the birds would desert the nests, but on examining same a fortnight later was pleased to find they were well tended, one of the clutches being just hatched. I was also down at the chief breeding-places, and counted over 35 nests, with an average of four eggs in each, also numbers being built.

15/9/05.—I visited the island again and found as many more nests, with fledglings all over the place. I saw six in one clutch—fine, strong little fellows. I noted nests that had been robbed a month formerly and were all occupied. The birds will always lay again if deprived of their first setting. They are certainly not going back in numbers, as I have remarked nests this year in places where I have never known them to lay before.

The Black Oyster-catcher and the Pied are much in evidence, as is also the Pacific Gull, although late in nesting. I have seen very few of the Caspian Tern, only finding a single nest, although, no doubt, they have patronized the islands in the

neighbouring Sound, but, unfortunately, I have had no time to visit them. The Dottrels (Red-Capped) are fairly numerous, but I have not found many of their eggs, as, owing to their laying in the sand and old sea-tang, one often passes them by without noticing, their colour, like most other birds' eggs, assimilating with their surroundings.

8th November.—Saw two Mountain-Ducks with six fledglings. One of the parents fled with the young ones into the centre of a lagoon, whilst the other followed me for hundreds of yards, settling on the ground a short distance ahead of me with wings fluttering, as one will notice many small birds do, to decoy us from the vicinity of the nest.

28 11 05.—Discovered a Reef-Heron's nest in a cranny of rock on a small island. It consisted of a perfectly flat nest of coarse grass stems, on which were deposited three light blue eggs. The young were just emerging from the eggs. The Wood-Swallow, Whistling Shrike-Thrush, Olive Thickhead, and a lot of the Honey-eaters are very scarce this year. The Brown Quail are now laying, but I cannot see any of the Painted (*Turnix*) variety, which always lay a month earlier than the former. We have the Black Crow-Shrike in fair numbers, and have found several nests, and the detested Ravens (from a sheep-farmer's point of view) are always much to the fore.—J. D. MACLAINE.

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YOUNG CUCKOO FED BY TWO PAIRS OF HONEY-EATERS.  
—When in the bush on 23rd December, 1905, with my mate, we were attracted by the familiar cry—"Chirrip, chirrip, chirrip"—of the young Pallid Cuckoo. Proceeding in the direction from whence the sound came we soon located the bird sitting on a branch near the ground, to all appearances not more than a day out of the nest. As we approached a pair of Black-headed Honey-eaters appeared; then a pair of New Holland Honey-eaters arrived, making a great commotion, but keeping at a distance. The Black-Caps took no heed of us whatever, but fed the Cuckoo and flew away. Great was our surprise when the "New-Hollands," as soon as the "Black-Caps" left, came down and fed the Cuckoo also. Making up our minds to see more of this we sat down and filled our pipes just as the Black-Caps returned, and a second or two brought the New-Hollands, the latter keeping in the background till the Black-Caps had gone again; then like lightning they would pop down, feed the youngsters, and off. My mate was bent on capturing the Cuckoo, but I would not hear of this till we had spent half the morning watching this performance, the same thing taking place each time. Then, armed with a green branch, my mate swept the Cuckoo to the ground and held it

there and secured it in his hand. Then came the fun, which is hard to describe. The New-Hollands went for him like little bull-dogs, flying almost into his face, and tumbling about on the ground in front of him, but the Black-Caps showed no fight and kept in the branches above, making a plaintive cry. I forgot to say that while the feeding performances was going on the youngster never once ceased his "Chirrip, chirrip, chirrip," and swallowed all the food with a greed that very nearly cost the foster-birds their heads. There is no doubt but that the Black-Caps were the real foster-parents, but what possessed the others to take to the bird and feed it?—ARTHUR E. BRENT. Austin's Ferry, Tasmania, 8/1/06.

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CAIRNS (N.Q.) NOTES. — Nutmeg-Pigeon (*Myristicivora spilorrhoea*).—On 29th October I went with a party from Cairns to the Frankland Islands, lying off the mouth of Russell River. The Pigeons were breeding much earlier this year than last, as some of the nests contained young almost able to fly, while nests were everywhere, containing eggs in all stages of incubation. Last year on 16th October I visited these islands and saw only a few nests, and they appeared to be old, while the Pigeons nearly all left the islands soon after daybreak, when the shooting commenced. This time most of the birds stayed on the islands all day, and, as they were very tame, numbers were shot. The birds do not seem particular about a site for their nests, which were placed at heights from 2 feet upwards, and situated in mangroves, she-oaks, scrub trees, or on "bird's-nest" ferns. Two young Pigeons, in pin feathers, that I brought home, took kindly to a diet of boiled rice and milk, with pieces of banana, which they are very fond of. The youngsters have now all their feathers and are distinctly different in colouring—one being creamy white and the other smoky white, except the tail and flight feathers, which are black in both birds, the flight feathers having a greyish wash. This difference may be on account of sex; perhaps the first moult will correct it. I believe the old birds have patches of yellow about the abdomen; these young birds have not, but their under tail coverts are distinctly rufous.

Varied Honey-eater (*Ptilotis versicolor*).—These pretty Honey-eaters, whose eggs I was fortunate in discovering last year, were fairly plentiful, considering the small size of the island, and their loud, musical call was frequently heard. I saw two pairs feeding their young, which were able to fly, but did not find any nests, it being evidently too late. The eggs which

\* Instances are recorded where more than one species of bird has been observed feeding young Cuckoos. See "Nests and Eggs" (Campbell), pp. 567 and 572.

I found last year on 16th October were only about two days from hatching.

Tooth-billed Bower-Bird (*Scenopæus dentirostris*).—On 17th September I found a playground of this bird about two hours' walk from Hambleton Mill, and decided to spend some time, later on, watching it, in hopes of getting some clue to the position of the nest. So on 22nd October I seated myself near the bower and watched the bird from 10 till 12. As his cries seemed to be answered by another bird not far away, I then followed the sound and found another playground about 100 yards away, which I watched from 12 till 3. Only one bird was at each bower, and as their antics were the same one description will do for both. Throughout the time I watched only one bird was at the playground, and he appeared to have no interest in anything but his collection of leaves. He would fly away occasionally for another leaf or some fruit, returning in two or three minutes, when he would place the leaf in position, upside down, have a look at the others to see if they were all right—but at no time played with them—and then fly to a twig about 8 feet above the leaves, and there perform; but his repertoire was very limited, his favourite number being the harsh, scolding note of the Drongo (*Chibia bracteata*). Occasionally he would imitate the Rifle-Bird and the Little Thrush (*Collyriocincla parvissima*), and he would frequently give a short, piercing whistle, which seemed to be his natural call. There is a mystery about these birds that will take some explaining. How is it that throughout the three hours that I watched him no other bird put in an appearance? If the owner of the playground had a mate, it seems strange that she did not show herself. If his performance is to attract a mate, he is certainly a most persevering but unfortunate suitor, as he has been hard at it for two months to my knowledge, and the birds are not scarce in the scrub about there, as I have seen them several times. Perhaps his mate was sitting, or he may have been a confirmed old bachelor collecting leaves for a hobby.—A. F. SMITH. Hambleton, Cairns, 22nd November, 1905.

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## Forgotten Feathers.

BY JAMES R. McClymont, M.A., Hobart.

AUSTRALIAN BIRDS IN THE "JOURNAL WEGENS EEN VOYAGIE NA HET ONBEKENDE ZUID-LAND."\*—In 1696 the Governors of the Amalgamated Chartered Company, trading to the Dutch East Indies, decreed that an expedition should be despatched to search for missing vessels, especially for the

\* Extracts from the "Journal" are given in *The Emu*, vol. iv., pp. 22, 23.

*Ridderschap van Hollandt*, of which no news had been received for the space of two years. The Amsterdam Board of Directors was charged with the execution of this decree, and equipped three vessels for the expedition. Willem de Vlaming was placed in command of the squadron, and was instructed to visit the Tristan da Cunha Islands, the Cape of Good Hope, and St. Paul's and Amsterdam Islands. Thence he was to proceed to the unknown south land, by which phrase, or by the name the Land of the Eendragt, Australia was designated in Dutch official despatches in the seventeenth century.

On the 29th of December, 1696, the vessels lay at anchor between Rottneest Island and the mainland. The island was searched for traces of shipwrecks, with but little success. A piece of timber was found which might have been a portion of the deck of a vessel; another piece measured 3 feet long and one span broad. The nails in the wood were much corroded. The search for shipwrecked mariners was equally unsuccessful on the coast of the mainland adjacent to Rottneest Island, but there were found several novelties which might have been turned to good account had their utility been better recognized, or had they fallen into the hands of inventive possessors. On the 30th and 31st of December, 1696, and on the 2nd of January, 1697, De Vlaming records in his "Journal" the finding of odoriferous wood, portions of which were subsequently submitted to the Council of the Dutch East Indies at Batavia; from these an oil was obtained by distillation. And on the 13th of January a dark red resin, which is said to resemble lac, was observed exuding from certain trees. But that which most awakened interest was a *rara avis*—the Black Swan. Many of these handsome birds were seen on Swan River; on the 11th of January, we read in the "Journal" (the title of which is cited above) that nine or ten Swans were killed or captured. Three were carried to Batavia alive, but died soon after their arrival.\*

Several boat expeditions ascended Swan River whilst the vessels were anchored between Rottneest Island and the mainland. During one of these outings the song of the "Nachtgael" was heard. The bird to which our author refers is probably the Nightingale, although it is quite within the range of possibility that the Wood-Lark is signified by this word, and one description of it as a bird which warbles almost all night long in the spring months befits the Sedge-Warbler better than perhaps any other bird. Nocturnal bird-songsters are uncommon in all parts of the world, and memory reverts to Gilbert's description of the

\* Letter of the Governor-General and Councillors to the Managers of the East India Company at the Amsterdam Chamber, "The Part borne by the Dutch in the Discovery of Australia," by J. E. Heeres, p. 84. Willem van Oudhoorn was in office as Governor-General of the Dutch East Indies in 1697.



song of the Long-billed Reed-Warbler, a nearly allied Australian representative of the Sedge-Warbler, which is abundant in the reed-beds of Swan River.\* It is in all probability the bird whose song was heard by the explorers. Two birds were seen on the river which it is difficult to recognize, owing to the archaic names by which they are designated. In an augmented edition of the Dictionary of Kilianus, published in 1642, the "Kropgans" is said to resemble a Swan. The Latin equivalent is "Onocrotalus," but what bird Latin authors called by that name is very doubtful. Although "Kropgans" is often rendered "Pelican," I am of opinion that the above-quoted definition indicates the Gannet rather than the Pelican. "Rotgans" is also a puzzling word. It is the name of the *Anser minor* of authors of olden times, and is so called in order to distinguish it from *Anser cinereus* or *major*—"Graeuwgans" in the Dutch vernacular. The former bird is, I believe, the *Anser albifrons*, the latter the *Anser anser* of modern authors. There is little room to doubt that the "Rotgans" of the diarist is the Cape Barren Goose, although the fact that in our days the Cape Barren Goose does not frequent continental rivers precludes a satisfactory identification. Other birds which were seen at this stage of the journey, and which are merely named in the "Journal" of the voyage, are Divers (by which we must understand Cormorants), Cockatoos, and Parrakeets. All the birds which were seen were shy, and flew away at the approach of the voyagers. Little Cormorants, White-tailed Black Cockatoos, and Yellow-collared Parrakeets were with little doubt amongst the number. No human beings were encountered, although the smoke of fires was seen.

On the 15th of January De Vlaming followed the coast northwards until latitude 30° 17' S. was reached, which is that of Jurien Bay. Two boats were sent on shore, and soundings taken. The country near the landing-place is described as being sandy and treeless, and neither human beings nor fresh water could be found.

It has been mentioned in the pages of this magazine that the word "Emu" is derived from the Portuguese "Ema," possibly, we may add, indirectly and through French. "Ema" appears to have been originally a name of the Crane, afterwards of the Ostrich, and finally of various other Struthious birds, such as the Cassowary of Ceram and the Rhea of the Brazilian and Patagonian sub-regions. "Cassowary" is said to be a Malay word; it was adopted by the Dutch in the form "Kasuaris," to designate the Cassowaries of Ceram and New Guinea. Both this word and the word "Emu" appear to have been bestowed upon the *Dromæus* of ornithologists at an early date in the history of

\* Gould, "Handbook to the Birds of Australia," vol. i., p. 403.

New South Wales. Cassowaries, we learn from the "Journal," were seen on the date mentioned above. These were almost certainly Emus, for the country described by the writer is not of the kind affected by the Cassowary, nor has that bird been discovered in the western coastal districts of Australia.

On the 30th day of January, 1697, latitude  $26^{\circ} 8' S.$  was observed, which is approximately that of False Entrance. On the 1st of February the pilot of the *Geelvink* left the ships in one of the *Geelvink's* boats in order to ascertain the position of Dirk Hartog's Reede, and the captains of two of the vessels made an excursion inland for the distance of six or seven Dutch miles, from which they returned on the following day, bringing the head of a large bird and the report that they had seen two huge nests built of branches—probably Eagles' aeries? The pilot returned to the ships on the 3rd of February, and reported that he had passed through the channel now named South Passage, and had followed the coast of Dirk Hartog's Island to its northern extremity. There on an acclivity a tin plate was found lying on the ground, having certain words traced upon it, whereof the purport ran that the ship *Eendragt*, of Amsterdam, Dirk Hartoog master, had arrived there on the 25th day of October, 1616, and had departed for Bantam on the 27th day of the same month. The pilot brought the dish with him and also brought two turtles which had been caught on the island. The squadron anchored in Dirk Hartog's Reede on the 4th of February, and remained there until the 12th day of that month. The anonymous diarist relates that on the 6th of February many turtle were seen, and also a very large nest at the corner of a large rock, made in the fashion of the nest of a Stork. Our author does not say to which Stork he refers; but it may be presumed that it is the White Stork (*Ciconia alba*), which, although it places its nest on a building or in a tree, may have nested, and most probably, like its congener the Black Stork, did formerly nest, on ledges of rock. In Australia the Black-necked Stork builds its nest in large trees growing in or near swamps; \* possibly, like the Black Stork, it also selects rocky nesting-sites. †

De Vlaming took leave of the Australian coast at  $21^{\circ} S.$  lat., and proceeded to Batavia, where he arrived on the 20th of March; he had failed to accomplish the object for which the expedition had been resolved upon, but had added considerably to the company's acquaintance with the hydrography pertaining to the route which their ships followed between the Cape of Good Hope and Batavia.

\* A. J. Campbell, "Nests and Eggs of Australian Birds," p. 969.

† Perhaps the nest of the Osprey.—Ebs.

## From Magazines, &amp;c.

A PARRAKEET HYBRID.—In *The Avicultural Magazine* for September W. R. Fasey describes the rearing of three hybrids from a male Crimson Parrakeet (*Platyercus pennantii*) and a female Yellow-naped Parrakeet (? *Barnardius zonarius*).

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ZOSTEROPS NESTING IN CAPTIVITY.—The same magazine (above quoted) contains an account of the nesting of a species of Zosterops in captivity in England, probably *Z. carulescens*. Eggs were laid, but something killed the birds before they got a chance to hatch.

\* \* \*

OVER THE BLACKS' SPUR.—In *The Victorian Naturalist* (February, 1906) Mrs. A. D. Hardy (née Miss A. F. M'Haffie) records a list of 46 species of birds identified by her during a trip undertaken last September with her husband.

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KING PARROT (*Aprosmictus cyanopygius*).—This species has been bred in England by Mr. A. J. Salter, who gives an account of his success in *The Avicultural Magazine* for November. The birds paired in 1894. Five eggs were laid, on the ground in an outdoor aviary. The two eggs that hatched were sat on for 26 days. One young bird died at three weeks, the other lived.

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"GENERA AVIUM."—To hand are parts i.-v. of this work, dealing with one family of Passeres (*Eurylemide*), one of Picariæ (*Todide*), and three of Psittaci (*Stringopide*, *Nestoride*, and *Cacatuide*). The text relating to the latter is by Count Salvadori, whose specialty is the order Psittaci. The two coloured plates illustrating the differences in the genera of Cockatoos are excellent.

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GOULDIAN FINCHES.—Dr. A. G. Butler says, in *The Avicultural Magazine* for November, that recent evidence is favourable to the view that the Red-headed phase of the Gouldian Finch is a mutation from the Black-headed race, and is on the increase, owing to the preference shown by the hens of both types for the Red-headed males, and that eventually the Black-headed race will become extinct. Black-headed parents have produced young with red heads.

\* \* \*

RED-HEADED AND BLACK-HEADED GOULDIAN FINCHES.—In past years I have had numbers of both species; and with me they (especially the males) have lived for long periods, but each bird, Red or Black, male or female, has invariably moulted true

to colour—a Black has never moulted into a Red.—REGINALD PHILLIPS (*Avicultural Magazine*, December, 1905). [This note should be read in conjunction with Dr. Butler's given above.—EDS. *Emu*].

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JOURNAL OF THE SOUTH AFRICAN ORNITHOLOGISTS' UNION.—This journal has reached its second number, and contains some important articles on African ornithology. A special feature is three very fine half-tone photo. illustrations of birds snapped in the open, with natural surroundings, viz.:—The Stanley Crane (*Anthropoides paradisea*), the Grass-Owl (*Strix capensis*), and the Knysna Plantain-eater (*Turacus corythoix*), with its nest and eggs.

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MUSK-LORIKEET.—This bird appears to be sometimes known abroad as Keith's Parrakeet. Capt. G. A. Perreau writes to *The Avicultural Magazine* from Bakloh, Punjab, India, describing the habits in captivity of four which he possesses. Musk-Lorikeets are not often regarded as cage birds in Australia, probably owing to the difficulties of feeding, but Mr. F. P. Godfrey successfully reared a young bird from the nest in 1904, and found it made a splendid pet. Captain Perreau says his birds ate canary seed ravenously, which seems curious in a Lorikeet.

\* \* \*

MOVEMENTS OF ROBINS.—Mr. Donald Macdonald, in his instructive and pleasantly written "Nature Notes," in *The Argus* of 26, 1 06, in referring to the Flame-breasted Robins migrating from the mainland to Tasmania, quotes a correspondent ("C. H.") who states:—"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 land was in sight."

\* \* \*

SUB-GENERA.—Dr. Ernst Hartert writes to *The Auk* for January protesting against the use of sub-generic names, and suggests that if a number of species is to be grouped into various sections (having a less than generic value) this is best done by using nameless headings, such as "Blue Tits," "Grey Tits," &c., or "A," "B," "C." Dr. Hartert also says:—"I do not deny my very strong tendency to combine allied forms as sub-species." Dr. J. A. Allen replies to Dr. Hartert in the same issue, upholding the use of sub-genera as serving in the case of a large genus to indicate degrees of relationship.

NATIONAL BIRD PROTECTION.—In a note to *The Auk* (January, 1906), Mr. Otto Widmann urges the taking over by the central government from the States of bird protection. His reasons are that State legislatures make grave mistakes in framing their bird laws, owing to lack of ornithological knowledge, that State Game Wardens and police cannot always be relied on to carry out the laws, and that migratory birds travel through various States, and so belong to no one State in particular. Probably the obstacle in the way is the limits of the Constitution, and the same would be likely to be met with in Australia.

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BIRD PROTECTION IN AMERICA.—The November-December number of *Bird-Love* gives evidence of the increasing amount of protection that is being afforded in America to native birds, especially to such as breed in colonies. There is plenty of opposition from insatiable "sportsmen" and those interested in the marketing of game birds and the plume trade to the work the Audubon Societies are doing, but it goes on just the same. Intelligent organization is the key-note. Here in Australia we have not half the number of difficulties to contend against that the Americans have; there are few vested interests here to be fought, and the general public is in favour of saving the birds. Could not the various ornithological societies and clubs in the Australian States make it their business to see that the colonies of breeding birds in their respective localities receive full protection, either by being set apart as reserves under the State game laws or the strict enforcement of the existing law where that would be sufficient?

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YELLOW ROBINS AS SNAKE FINDERS.—Where the bush is located near to a residence, the domestic cat, a monitor, blue-tongue, or Jew lizards will cause the birds to give forth their alarm notes, but if persons frequenting the bush lands, near to Sydney especially—in fact, all over the county of Cumberland—would make acquaintance of the native bird known as the Yellow Robin (*Eopsaltria australis*), then, when these snake finders (the Yellow Robin) of Australia give forth their incessant notes of warning, a snake or snakes are somewhere under wherever these birds may be in the tree or scrub. Snake-catchers owe more to this particular bird than any other in securing snakes for trade purposes. Up country, where the Yellow Robin does not exist, the Soldier (Miner), Magpie, Bower-, Butcher-, and other native birds perform exactly the same office for man, if he will take it as a warning, as the Yellow Robin does for the men or women of the city or suburbs.—J. S. BRAY (*Daily Telegraph*, Sydney, 26/1/06).

NEW ZEALAND BIRDS.—The record by Mr. W. K. Ogilvie-Grant of the birds obtained by Lord Ranfurly on two trips to the islands south of New Zealand makes interesting reading in *The Ibis* for October. Seven species of Penguins, twenty-three of Petrels and Albatrosses, and fifteen of Cormorants are enumerated. Six specimens of the rare Southern Merganser (*M. australis*) were taken on the Auckland Islands. The White-eye (*Zosterops cerulescens*) was found on most of the islands. Some birds from the mainland of New Zealand are described in the same paper, among them a Hudsonian Godwit (*Limosa hudsonica*), which the late Capt. Hutton forwarded to the British Museum, at Lord Ranfurly's request. It was shot at Lake Ellesmere, Canterbury, on the 4th of March, 1902, and is stated to be the first example of this species recorded from New Zealand, its range being restricted to the New World, where it extends from Arctic America to the Falkland Islands. There are also incorporated in the paper some excellent field notes by Mr. R. Henry (of Resolution Island) on the Roa (*Apteryx australis*), Weka (*Ocydromus australis*), Quail-Hawk (*Harporhynchus novæ-zealandiæ*), Kaka (*Nestor meridionalis*), Kakapo (*Stringops habroptilus*), and South Island Tit (*Petrarca macrocephala*).

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IN the annual report of the horticultural and viticultural expert (*Journal of Agriculture*, W.A., vol. xii., part vi., December, '05, p. 544) some mention is made of fruit-eating birds. It is recorded that during the past year they did little or no damage. The author says:—"As a matter of fact, we have few fruit-eating birds in Western Australia, and, apart from Silver-eyes, 'Greenies,' Wattle-Birds, and Spiny-checked Honey-eaters, which only appear in any number amongst the fruit crop every few years, we are singularly free from such frugivorous birds as Parrots, Parrakeets, Minahs, Leatherheads, and those introduced pests the Sparrow and the Starling, which levy an ever-increasing tax on the orchards and vineyards of the eastern States." The report goes on to say:—"Concurrently with the notable absence of the Silver-eyes and 'Greenies,' the woolly-aphis pest has been more in evidence than it has for years past. A systematic examination of the crops of fruit-eating birds right through the seasons of the year, conducted on species killed in as many districts as can be arranged, would throw some light on the quality and the source of supply of the food of these birds. A better understanding of their dietary would enable us to understand how far we can go in encouraging the destruction of these birds before the balance of nature is seriously disturbed."

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NESTING OF AUSTRALIAN FINCHES IN ENGLAND.—In *The Avicultural Magazine* for December Mrs. Howard Williams records the breeding of the White-breasted or Pectoral Finch (*Munia pectoralis*) in her aviaries. A brood of seven was hatched in

September. Unfortunately the mother and one of the youngsters subsequently died, but the rest of the family continued to flourish. The young are described as "dressed in shades of brown, with light under parts; the two youngest being rather Sparrow-like in colour. Of the rest, one shows rather dark ear patches, another faint signs of them, and the upper part of the breast is dark, but not one has a trace of the pretty mottled breast of the adult bird, or the pinkish tint of the under parts." The eggs were laid in a rush basket, placed somewhat high in the aviary. In the January issue of the same magazine Mr. W. E. Teschemaker furnishes an interesting note on the nesting of the rare Yellow-rumped Finch (*Munia flaviprymna*). Mr. Teschemaker describes the female, which is the smaller bird, as much darker and more streaky on the back of the head, whilst the male has the upper part of the breast a much brighter, warmer buff than the lower part, the hen having a uniform shade over the whole of her breast. A nest, elliptical in shape, was constructed in a box shrub, about 4 feet from the ground, and was exceedingly well compacted of long stems of freshly pulled grass, not being lined in any way. Eventually four eggs, pure white in colour and sharply pointed at one end, were laid, of which three were hatched. As the eggs of this Finch have not yet been technically described, Mr. Teschemaker sent other examples to the British Museum. In both Mrs. Howard Williams's and Mr. Seth-Smith's aviaries the same season, several nests of the Yellow-rumped Finch were built and eggs laid; in the latter aviary young were hatched, though not reared. It was observed that the Yellow-rumped Finch resembles its cousin, the Chestnut-breasted, in song, love-dance, and call note.

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BIRDS OF PHILIPPINE ISLANDS.—In the publications of the Bureau of Government Laboratories, Manila, Mr. Richard C. M'Gregor, Natural History Collector of the Bureau, has published an important contribution on (1) "Birds from Mindoro and Small Adjacent Islands" and (2) "Notes on Three Rare Luzon Birds." In the former article are recorded over 100 species of birds observed or collected by the author and his party along the Bacó River, in the northern part of Mindoro, during March, April, and May, 1905. The first collecting station was a short distance from the coast, locally known as Chicago. Although two specimens of a new Swift (*Chetura*) and a specimen of the beautiful little Bronze-Cuckoo (*Chalcococcyx xanthorhynchus*) were secured, Chicago was not satisfactory for collecting purposes, therefore a move was made well up the river to Balete. Here a camp was made—in fact, a house was built—in the virgin forest, as near as possible to the base of Mount Halcon. This locality proved more satisfactory than the

coastal station, as the forest was extensive, fairly free from underscrub, and traversed by numerous tracks. A good series of birds peculiar to Mindoro were obtained, several species being added to the known avifauna of the island, including a Caterpillar-eater (*Edoliisoma*) hitherto undescribed. Mr. M'Gregor intended to make a third camp on the mountain, but he could not obtain enough of the wild hill people, known as the Mangyanes, to carry even a third part of the camp paraphernalia. Photographs are given of the two camps, amid vegetation suggestive of tropical Queensland, besides numerous illustrations of birds and nests, including the nesting site of the Little Mangrove-Bittern and the nest and young of the White-rumped Wood-Swallow, both well-known Australian species. Three nests of the Mangrove-Bittern were found—two each containing a pair of young, the third a single bluish egg. The nests consisted of very small bunches of twigs placed on roots of fallen trees in midstream. Several nests of the Wood-Swallow examined also contained young, but two were found with each a full complement of four eggs. The nest was always placed on the end of a snag or butt of a fallen tree in the river.

With true American enterprise, the Government are exploring the avifauna of the Philippines. Surely this is an example to Australian Governments. How rarely is an Australian natural history collecting expedition subsidized except by private (often foreign) enterprise! If our Governments do not rise to their responsibilities in exploring vast regions—notably the great North-West—of unknown Commonwealth territory, will not some public-spirited citizen embrace the opportunity, and thereby enrich the knowledge of the world, and at the same time send his name down to posterity for ever?

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THE REGENT-BIRD.—In *The Avicultural Magazine* for December, and continued in the two following issues, Mr. Reginald Phillips contributes a most interesting and valuable article on Regent-Birds (*Sericulus melinus*) which he has kept in his aviaries, where he was successful in getting them to breed.

Mr. Phillips finds much character in the Regent-Bird, its ways and habits being of exceptional interest, whilst its movements are quaint and curious, and its manner of courting fantastic to a degree. "A healthy Regent in a roomy place must play the fool, and if it has not a fellow to play the fool with, it will play the fool with some other bird, with a stone, a projecting stick, anything. It is never so happy as when making itself ridiculous." The Regent-Bird is evidently not a cage-bird, but must be kept in a natural garden aviary, and as its native habitat is the tropics and sub-tropics, it must not be over-exposed to cold. Care is also needed with its food, or the bird



is subject to fits. The old birds should be fed chiefly on fruit and vegetables.

How long does it take the male Regent to don its full plumage of glorious yellow and velvety black? On this point Mr. Phillips records some interesting particulars. But as the observations were made in a country where the climate is comparatively dark and cold, and where the bird's seasons are reversed, the periods of time might have varied had the same birds been under observation in Australia. Going into details of the process of colouration as regards his mature males, Mr. Phillips states:—"My present bird, when received on the 4th August, 1899, had just a little yellow on the wings. During the moult of that autumn he put on a trifle more yellow but no black. In July, 1900, he commenced growing a few yellow and black flights, and during the autumn his bill became yellower and the head assumed a faint wash of the same colour. Judging by my earlier specimens, and this bird and others I have seen, I think that the Regent either takes a longer period to come into full colour than Mr. Campbell supposes,\* or else that the due development of the colour is greatly retarded by the coldness of our climate or the adverse influences of a life in captivity. This bird completed the adult plumage in October, 1901. But what was his age when he reached my hands? Judging by other examples, he could hardly have been less than rising two, otherwise he must have been hatched, say, in January, 1899, and have commenced to put on colour when some seven months old. So far as I have been able to observe, this could not have been the case, for males in 'female' plumage—unless I am greatly mistaken—have reached this country which *must* have been hatched a full twelvemonth previously.

"Let us trace another specimen. In January, 1903, I received an immature but well-advanced male—so advanced in plumage that at the least he must have been a year older than the old male was at the time he came into my hands. He could not have been *less* than two years old. In the autumn of that year he became more yellow, but not much more. He was in perfect health all through the moult, the fit previously referred to not occurring until 23rd October. A year later he became more black and a little more yellow, but was far from being in the full plumage of the adult when he died on 5th November, 1904. I then found, according to my notes made at the time, that the tail 'seemed new and perfect, but was not black.' The flights had all been more or less renewed; and it is most improbable that the old 1903 tail, which had borne the brunt of the fit, could have remained perfect, and that not a single feather had been renewed or even cast during the moult. The 1904 tail

\* "The youthful male resembles the female. The second year the bill is yellowish, the third or fourth year the plumage is complete."—"Nests and Eggs," p. 209.

then being brown, the bird, if he had lived, would not have come into colour until this autumn, unless twelve months of doubtful health hindered the proper development of colour. In the latter case one might have supposed that at any rate some of the tail feathers would have shown signs of black. I think it will be moderately safe to say that in this country the male Regent does not obtain full feather until he is about four years old, or possibly not until he is rising five."

The ordinary bowers of Regent-Birds, which have been described and photographed, are for the purpose of the males "showing off" before the females. Mr. Phillips informs us that the females construct different bowers, a trait in the character of this remarkable species that has apparently escaped the notice of field observers in Australia. "These love parlours, *each one built by a female for her sole use*, rather in the open and not far apart, and each most jealously guarded by its fair owner, were of the shape of a horseshoe magnet but with the sides equidistant throughout their entire length, open only at one end, and inside of about the same length and breadth as the bird, the top of the barricade being about on a level with the back of the squatting female, the sticks, woven together, being laid flat, none upright. The female would enter and squat in her love-parlour, the tail remaining towards the entrance, whilst a male, with every imaginable and unimaginable contortion, accompanied by a continuous discharge of (vocal) firearms, would make rushes and furious (feigned) assaults on the front of the breastwork, the female sitting in a lump and not moving a muscle. Every now and again, however, the male would slyly work round to the rear and tweak the tip of the female's tail. This advance, at any time perhaps but the very early morning, or at any rate while I was looking on, was not considered correct, and the female would slowly turn her head with what we will suppose was an icy look of grave disapproval. The second female, as I may call her (in the autumn of 1904), was the most energetic, and her fortress became a really formidable structure, the parapet being raised *pari passu* with the additions to the platform."

Mr. Phillips's crowning success was in getting his Regents to breed. The exact dates on which the females commenced to sit could not be ascertained, but the period of incubation is provisionally stated as 19-20 days. The female hatched the young and undertook the entire work of providing food for them—one reason, perhaps, why she is, as a rule, larger and more powerful than the male, while the evidence of the aviary points to the male being a polygamist. At first he mounted guard close to the nest of the sitting female, but before long he took up entirely with a second mate. The first female hatched two young, one of which was reared, but the second appeared to have unfortunately succumbed to climatic conditions.

## Review.

"CATALOGUE OF BIRDS' EGGS," VOL. IV.

THIS volume—the combined labours of Capt. Savile G. Reid and Messrs. Eugene W. Oates and W. R. Ogilvie-Grant—contains descriptions of 620 species, the number of eggs catalogued being no less than 14,917. The families dealt with are from the Timeliidae to the Certhiidae according to the "Hand-List of Birds" by Dr. Bowdler Sharpe.

Australians will be gratified to find that so many of their vernacular birds' names have been employed in the "Catalogue"—such names, for instance, as Bush-Chat, Log-runner, Ground-Bird, &c., but it will be difficult for them to call the familiar Magpie-Lark a "Magpie-Shrike." The work is illustrated with 14 most excellent plates of eggs coloured to nature by the artistic skill of Mr. H. Grönvold and Messrs. Pawson and Brailsford. In the plates the following eggs are figured for the first time, namely:—*Cinlosoma castanonotum*, *Acanthiza inornata*, *Acanthiza opicalis*, *Malurus splendens*, *Artamus hypoleucus*, *Cracticus leucopterus*, and *Falcunculus leucogaster*. If the locality (Gippsland) be correct, it is doubtful if the figure 17 on plate iii. is referable to *Hylacola cauta*. It may be *H. pyrrhopygia*, if it is really not a *Calamanthus*. As far as all the Australian species are concerned there are only two other slight slips noticeable. Under the *Orcocichla lunulata*, the two eggs collected by Mr. E. D. Atkinson probably refer to the Tasmanian variety, *O. macrorhyncha*; and, under *Malurus lamberti*, the specimen credited to Mr. White, from South Australia, evidently refers to *M. assimilis* (North).

Australian oologists will no doubt be pleased that the authors of the "Catalogue" recognize the Lesser Rufous-breasted Shrike-Thrush as a good species, which is now designated *Pinarolestes gouldi* instead of *P. parvissima*.

## Correspondence.

DO OTHER BIRDS BESIDE THE DICÆUM DISTRIBUTE  
MISTLETOES?

To the Editors of "The Emu."

SIRS,—*Re* Mr. A. G. Campbell's article on the birds of Kangaroo Island in the last number of *The Emu*, and the reference to the absence of the *Dicæum* and of mistletoes (*Loranthi*) from there and Tasmania, the following note made by Mr. J. H. Maiden to the Linnæan Soc. of N.S.W., on 28th September, 1904, may be of interest to him. It reads:—"The late Professor Ralph Tate makes the statement (*Proc. Aust. Assoc. Adv. Sci.*, vol. vii., p. 556), that 'both bird (Mistletoe-Bird, *Dicæum*) and mistletoes

are absent from the large adjacent islands of Tasmania and Kangaroo Island.' For some time past I have been making inquiries on the subject, through the kindness of Mr. Walter Gill, Conservator of Forests, Adelaide. In June, 1903, he reported that a Mr. Wells had seen mistletoe growing on gums (eucalypts) at Duck Lagoon, Cygnet River, 12 miles from Queenscliffe, Kangaroo Island, but no specimens were available. Since then specimens have been received from Mounted-Constable Thorpe, who obtained them from White Lagoon. They show the mistletoe (? *Loranthus pendulus*, Sieb., var. *parviflorus*) in leaf only, *in situ* on *Melaleuca*, sp. It remains to test further the truth of the dictum as regards Tasmania."

This must mean either that the *Dicaeum* does or did occur on the island, or else that other birds can play a part in disseminating the fruits. In *The Trans. of the Roy. Soc. of S. Australia*, vol. xxvii., part 2, p. 253, Mr. C. F. Johncock, in a short article on *Loranthus exocarpi*, favours the latter view. He considers *Acanthochera carunculata*, *Zosterops carulescens*, *Graucalus melanops*, and perhaps *Acanthiza*, which nest in the mistletoes, as undoubted agents. In the first-named of these he found seeds in the digestive apparatus.—I am, &c.,

J. BURTON CLELAND.

Parkside, Adelaide, 4th February, 1906.

#### THE BIRDS OF KANGAROO ISLAND.

*To the Editors of "The Emu."*

DEAR SIRS,—In the report on the Birds of Kangaroo Island, in the last issue of *The Emu*, and which I take to be the Union's official list of birds observed there, I see *Eopsaltria*, sp., recorded on the evidence of a whistle alone. *Eopsaltria gularis* occurs on Eyre's Peninsula, some hundred and fifty miles west of Kangaroo Island, but its note does not resemble that of *Eopsaltria australis*, which is not found on the eastern side nearer than the Victorian border.

*Glossopsittacus pusillus* is recorded as observed but not collected. *G. porphyrocephalus* is known to occur on Kangaroo Island, and is a common bird in the southern portion of South Australia, whereas *G. pusillus* is not common anywhere in South Australia, and the two species are scarcely distinguishable when feeding in the gum trees.

*Platyercus eximius* is noted as having been observed towards Cape Borda. This bird is not known to occur anywhere west of Kangaroo Island, and on the east side not nearer than the Victorian border. Taking these facts into consideration, I think that these three names should be expunged from the official list.

While on the subject of the official list, I venture to enter my protest against the haphazard description of new species on what seem to me very slender grounds—slight differences in measurement and shades of plumage. I do not think this should be done without the examination of a large series of specimens, both of island and mainland birds. *Zosterops halmaturina*, in particular, should be very carefully inquired into. This bird is well known to vary considerably in plumage, and is also a very strong flyer—witness its spontaneous appearance in New Zealand. I have myself on more than one occasion seen flocks of these birds several miles from land, and a seafaring friend told me some years ago that a flock settled in the rigging of his ship when about 1,000 miles from land. It is hardly to be supposed that such a bird would have any difficulty in crossing Backstairs Passage—about five miles. Moreover, the *Zosterops* on Eyre's Peninsula is *Z. carulescens*. *Acanthiza halmaturina* has already been examined by Mr. North, and the name *A. zietzi* suggested, in honour of Mr. R. Zietz, who sent him the specimens. He has not yet, I believe, ventured to describe it as a new species without further evidence. As regards the other new species, I may state that the S.A. ornithologists have been familiar for years past with the Kangaroo Island forms, and have had opportunities of comparing them with the mainland birds, and it has not hitherto occurred to them that they required separation.—I am, &c.,

A. M. MORGAN.

Adelaide, 23rd February.

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PRINCIPLES OF MIGRATION.

To the Editors of "The Emu."

SIRS,—In looking over Mr. Mattingley's interesting paper on "The Principles Governing . . . Migration in Birds," I was astonished to read the following sentence, penned in all seriousness—"The date of migration varying according to the climatic condition of the season" (*Emu*, vol. v., p. 147). Now, not alone do common-sense and the "reason" of which our author writes so glibly, but hard fact, incontestably prove the inaccuracy of the above statement. I do not claim to be a "full-fledged" ornithologist, nor for the matter of that does Mr. Mattingley, so far as I am aware, and we therefore meet upon tolerably common ground, but I do claim to have kept the records of Irish migratory birds for more than fifteen years, and to have closely studied the problems of their vernal migration. During eight of those years I resided either wholly or during the springtime in Dublin, and it was my daily habit to stroll for an hour before breakfast, *malgré* the weather, along the banks of the Dodder between Ballsbridge and classic Donny-

brook. From the 25th of March I began to keep careful watch for the Sand-Martin (*Cotile riparia*), the most delicate of our three Irish *Hirundinidae*, yet ever the first to arrive; I never knew this frail little wanderer to fail in putting in an appearance between the date mentioned and the end of the month. There I would surely find them seeking their insect prey even in the midst of driving sleet and a bitter easterly wind. Same with our Swallow (*Hirundo rustica*), only a week later. Same with the delicate Willow-Wren (*Phylloscopus trochilus*) and the still more fragile Chiffchaff (*P. rufus*), only a full month later. Climatic conditions have nothing whatever to do with migration. Will Mr. Mattingley kindly explain how a bird bred last year in Dublin, having wintered in Egypt, when the "homing instinct" comes to it, can possibly know in sunny Africa the "climatic conditions" affecting Ireland? It knows nothing of the sort; it simply wants to go to its birthplace, and it goes there blindly and unreasoningly, even though that "instinct" brings it to starvation and death. I have seen too often the whole pitiful tragedy of a late spring not to know of what I am talking.—I am, &c.,

J. DOUGLAS OGILBY.

Queensland Museum,  
Brisbane. 12th February, 1906.

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### Obituary Notice.

FLETCHER—On the 23rd January, 1906, at Wilmot, Tasmania, Price Fletcher, youngest son of the late Rev. Richard Fletcher, St. Kilda.

THE death of Mr. Price Fletcher will be learned with great regret. He will be best remembered by bird-lovers as the "Bush Naturalist" of *The Queenslander*, of which journal he was for many years agricultural editor.

The late naturalist was born in 1836, at Manchester, where his father was Congregational minister. When he was 17 years of age his father was sent to take charge of the Congregational Church at St. Kilda, Victoria. Mr. Price Fletcher became engaged in pastoral pursuits, and found in the Australian bush great scope for his taste for natural history. He travelled extensively in Central and Eastern Australia, from north to south. Writing under the *nom de plume* "A Bush Naturalist" in *The Queenslander*, the late journalist's natural history sketches were first brought into prominence by an article "Birds as Indicators of Water;" and "The Struggle for Existence in the Northern Scrubs"—a masterpiece—was reprinted by many English journals, while his more serial bird observations, under the heading "The Great North-Western Interior," appeared from time to time in 1878 and 1879.

Miss A. Fletcher, of Wilmot, Tasmania, a member of the A.O.U., inherits her father's love of birds, and has contributed many interesting field observations to *The Emu*. The late Mr. Price Fletcher was with his daughters (Misses J. and I. Fletcher) in Tasmania when he passed away and was buried at the end of the allotted span—"three score years and ten"—in a cemetery in a forest of great gums—a fitting resting-place for the beloved "Bush Naturalist." "Sleeping by the trees he loved so."

The following quotations are a few vivid pictures of bird life culled from the late Mr. Price Fletcher's writings in *The Queenslander*, which speak for themselves regarding powers of observation and description :—

Concerning the Black Falcon (*Falco subniger*) and other Hawks :—

"The cattle—a herd of, say, 1,000—are slowly feeding along, extending a line of 300 yards in width. Gliding in between and about the leaders are the Kites ; but higher up—for he must have height for his terrible swoop—is flying our black pirate : he disdains to keep in front, but circles round and round from front to rear, his keen eye ever vigilant, his power ever ready. A poor little Painted Quail rises, the tiniest of its species, the meekest, the most harmless of birds. He will not fly far : the Kites will even try for him. He runs the gauntlet of a dozen of them, but a Brown Hawk, who has been flying unobserved among them, sees it, turns round, a flap or two of his strong wings, and before the Kites are aware of his presence their prey is whipped up and away from them. But look, look ! a large Partridge Quail is up ; away it goes, with the swiftness of an arrow from a bow : no Kite can catch it : it, at least, is safe—but, no, the cruel eye of our black destroyer has sighted it. Oh ! what a swoop he comes down with, what a whiz through the air his powerful wings do make ! Drop, my poor Quail, drop in the grass, instantly drop, or you are dead ; it is not the Kites that are after you, nor even the Brown Hawk, but the unerringly fatal, the deadly Black Falcon ! You cannot outfly him. What a race for life ! But it is useless, for with a thud which even we at the rear can hear are the terrible talons driven into the poor Quail, and without the slightest cessation in his majestic flight this powerful Hawk carries his prey up into the higher regions, in order to devour it at leisure. Well he deserves his meal, for his own skill has caught it ; but not yet is it his, for he has been watched by another, a fellow companion equally powerful and swift as himself, and who wants a share of the feast. A fight now ensues ; of course the bird that is encumbered gets the worst of it, and after some screeching and clawing at each other the Quail is dropped. Quick as lightning is this seen by the second robber, who turns, dives down, and although the bird has already fallen some yards, it is actually caught again before it can reach the ground. There is something gloriously grand in this easy power of wing—a power which even man may envy ; yet my sympathies are with the poor Quail ; the others are at best but murderers : they kill nothing that can resist—simply slaughter the most innocent of birds. This law of cruel destruction is indeed an enigma ; when will it be solved ? These Falcons, like the Kites, eat their prey on the wing ; they also feed on the grasshoppers. Strange to say, they are not quite so expert at catching them as the more sluggish Kites ; still they are not far behind, and must destroy numbers. They are not nearly so numerous as the Kite, or so gregarious in their habits. The strong-flying plains Pigeon is seldom attacked by them, yet I have seen it done several times, and then ensues a splendid race, for the Pigeon does not, like the Quail, drop when pursued, but trusts to sheer

speed to outfly its enemy. It is a grand race; both are so terribly in earnest; and I am glad to say the Pigeon generally wins."

A "desert beauty"—the Tricoloured Bush-Chat (*Ephthianura tricolor*):

"I don't know why, but from the first time I saw Gould's fine picture of this beautiful bird and read his meagre description of it, I burned to possess it, to see it in its native haunts, to discover all about it. What a glorious thing is the untamed ardour of youth! What a little it makes of a difficulty if a hobby is to be gratified! And I really believe it was the thought of seeing this bird that sent me years ago out into what was then a dry, inhospitable region, unknown and untaken-up by squatters—I mean the north-east corner of South Australia. I was really looking for available sheep country, but I determined to find out all about this bird as well. Imagine my intense delight when one day I saw a whole flock of them flitting before me; and, moreover, it did not take me long to notice that they were actually nesting. Here was a prize indeed—to find the nest and eggs of what was (then) admitted to be one of the rarest, if not *the* rarest, bird in the whole of the country. Great was my pleasure when I found that almost every saltbush had a nest in it, and I soon collected as many eggs as I could pack. Unfortunately, through the vicissitudes of outside travelling, they all got broken and lost before I again returned to civilization."

The small Blood-stained Cockatoo (*Cacatua sanguinea*):

"These lesser Corellas are useful as water-finders, as stated in my previous paper on water-finding birds. I have a particular affection for them, as I once found a large hole and a fine piece of country through them. I was travelling up a creek in what was then unknown land; it is some years ago now, and the scene I am about describing has vanished before those more utilitarian occupants, sheep and cattle. The season was dry—there had been no winter rains—and I was hunting for water. I had followed up the creek until I thought I was at the last water, and had camped. The creek here split into two feeders; both had heavy timber on, and ought to have had water, yet I had followed one branch for some seven miles, and had to return without finding any: the creek had got drier and drier, more stony and less likely to hold. I was dispirited, for the other branch I had also gone up three miles, and it seemed of the same character; and my horses being tired, and night closing, I had returned to my present camp. It was at a wretched little dirty puddle, and, not having found any water for many miles down the creek as well, I had determined to give up further search, when just at sundown a very large flock of these Corellas came flying by me and up the creek, and to my surprise went along the very branch I had travelled up so far. Knowing so well the habits of these birds, and that they rejoiced in making a 'camp' or roosting-place at the top water of a creek, I was delighted, for I knew that at this time of day they were not going on to the plains to feed, but must be going to water and to roost. Intently and anxiously I watched that flock; I am sure I kept sight of them for five miles—not indeed really, but in this way: the sun was just setting, and the beautiful snow-white of their plumage as they twisted and twirled in their flight caught these setting rays and reflected the light like the flash from a moving mirror, and I kept catching gleams of this white cloud long after the flock was otherwise indistinguishable; and they were still flying up the creek. This decided me, and I determined, on the morrow, to go after them till I found them. Very early dawn found me stirring; I had done the seven miles I had previously travelled by an hour after sunrise, and yet there were no signs of the birds; another two miles, and the creek looked less and less likely for water; the channel was degenerating in size and depth, the timber was getting thinner and less



continuous, and I began to think I had trusted too much to my presumed knowledge of the habits of my Corella friends. I felt dispirited; I had left camp without any breakfast (a very foolish thing for anyone to do, if he can help it, for there is nothing like a full stomach to give pluck); for the water was bad, and anxiety had taken away my appetite. I was now nine miles from the morning's camp, the horses were thirsty, and the creek looked so unlikely that I was just upon the point of turning back when my eye caught the white gleams, so well known, of the birds' wings. It was a long way off—at least two miles up the creek—but there was no mistake, there were my friends of the night before. With great glee I urged on, and the gleam resolved itself into flocks, and the flocks into innumerable individuals. What strange white trees are those ahead? Surely they cannot be Corellas on them; yes, indeed they are, a perfect forest of Cockatoos! My heart beat high with pleasurable excitement; visions of an interior lake and a consequent happy homestead rose before me, and I felt pleased that my trust in my feathered friends had not deceived me. Another half-mile, and my astonishment was indeed great; they really were trees ahead, and, instead of leaves, they were loaded with Corellas. What extraordinary numbers! Excitement made me quicken my pace from the usual explorer's walk to a canter, and I was rewarded by the sight of a fine hole of water and the discovery of a veritable Cockatoos' haunt—*the home of the Corella*. Oh! the noise, the frightful noise, as I rode under the trees to the water's edge. What a babel of tongues, what incessant screeching, what a whirling, flying, moving mass of noise—50,000 Cockatoos all screaming at once! Just for one moment try and realize it, reader, and you will involuntarily put your fingers to stop your ears. What incredible numbers; the air is white with them, the trees are white with them, and the ground round the edge of the water is white with them! I had seen 'Cockatoo holes' before, but never such a scene as this; it was quite evident I had hit upon a favourite haunt, and one in which they were not often disturbed, even by blacks."

#### The wonderful Flock Pigeon (*Histriophaps histrionica*):

"They are gregarious in the extreme, keeping during the winter months in flocks of thousands. I was camped one September day at a large water-hole, about 100 miles north-west from the Cloncurry. About half-past 4 they began to come in from the plains; being so used to flocks of them, I at first paid no particular attention, but, getting up and looking round, I was astonished to find that as far as the eye could see in a north-westerly direction there was one continuous stream of these birds, apparently making for this water. Settling on the edge of the hole, I gave myself up to the pleasure of observing them. These Pigeons are most peculiar drinkers; most birds are very deliberate over this matter, and even by their lifting up their heads heavenwards seem to return thanks; not so our vigorous Pigeon friends: they are not at all reverential, but drink as though their very life depended upon doing it quickly, as if the water would dry up before they could taste it. A flock, after flying several times swiftly round and round the lagoon, suddenly swoops down at a convenient spot, plunging their beaks into the water up to the eyes; they give two or three hasty gulps, and then suddenly, as if alarmed, they rise up and fly off again, before, I am sure, one-half have had time to touch the water. After flying round in wide circles they again repeat the performance, till, I suppose, at last they do manage all to get satisfied. I cannot help thinking that the peculiar manner the blacks have of hunting them, and which I shall presently describe, has something to do with this strange method of drinking. At this hole, on this particular afternoon, they kept up these manœuvres till sunset, and the hundreds of thousands that had accumulated there (many flocks had flown away satisfied), was a sight that to the eyes of a naturalist was delightful. It would take the pen of an Alexander Wilson to graphically describe the scene; how, in spite of their really incredible numbers, their closeness

together, and their extreme rapidity of flight, yet not one ever made a mistake and 'cannoned' against its neighbour; in and out they glide, circle within circle, and each circle counting thousands; all seem to be moved by one spirit of unity, and they swoop and turn, rise and fall, as if directed by an invisible hand. The roar from their wings, as a larger flock than usual rose, was really deafening. The Ducks paddled to the centre of the water, and the Herons and Spoonbills sailed away to neighbouring trees, evidently annoyed at this noisy interruption of their quiet habits. The sight was one never to be forgotten; it was a red-letter day among the many such days that a 'bush naturalist' can get in Queensland. Incredible as the numbers were on this occasion, they were as nothing to the millions of 'Passenger Pigeons' as described by Audubon and Wilson in America. I should think that on the whole of earth's surface no family of birds can surpass the Columbae in numbers. Never but this once has it been my good fortune to see such excessive numbers at one time. Generally speaking a waterhole is chosen for a favourite drinking-place that is free from much timber, with a good, firm, gradually sloping 'shore' to the water. This gives plenty of room for their eccentric habits. I came across such a place one day, about 50 miles from the scene just spoken of, and was surprised to find it, as it were, planted all round with gum-tree branches. I could not at first make it out at all: these bushes were stuck into the mud close to the water, and were about the height and the distance apart that gooseberry bushes are usually grown. It did not require the footprints, quite fresh, of blacks to let me know it was their work: but I thought the children had done it in their 'play about.' Seeing a rude sort of gonyah at each end—the hole was about 100 yards long—I rode up, and then the mystery was explained by the heaps of Pigeons' feathers lying about. I afterwards had the pleasure of watching the blacks in this place catching them. It is thus: The blacks, well supplied with light boomerangs, conceal themselves, one in each gonyah, and wait patiently till the Pigeons come. They, with their usual impetuosity, after some preliminary circling, swoop down to the water, the little bushes confuse them, momentary disorganization ensues, they try to rise again, but their unity of spirit is broken, and they are a whizzing, buzzing mob of rabble. This is the time waited for by the blacks, who, springing to their feet, with eyes dilated, muscles quivering with wild excitement and savage satisfaction, hurl boomerang after boomerang into the seething mass before the astonished pigeons even know that their arch-enemy is upon them. The whole scene did not take two minutes of time, and yet there lay dead and wounded some four dozen birds."

### Notes and Notices.

CORRIGENDA.—In the last issue, page 163, line 2, for "NOVEAU" read "NOUVEAU;" page 165, line 35, for "*cyanops*" read "*cyanopus*."

"FROM a negative by Messrs. Standish and Preece, Christchurch," was inadvertently omitted from the portrait of the late Capt. F. W. Hutton, which appeared as a frontispiece in the last number of *The Emu*.

HIGH PRICES.—It will surprise bird-owners to discover that the Gouldian Finch when first imported by Abrahams realized £10 per pair, and *Bathilda ruficauda* £8.—*Avic. Mag.*

FOXES!—A landowner (who shall be nameless) 27 years ago liberated near Melbourne 6 pairs of foxes "just for sport."

Last year, according to statistics, the municipalities of Victoria paid for the destruction of 48,000. It is obvious that there must be more of these animals remaining in the bush than were destroyed. But suppose we take the same number (48,000) as remaining. In another 27 years if these are not checked, and taking the same ratio of increase, there will be 192,000,000 foxes in the land. But, alas! where will some of our native birds be? Swept off the face of the earth, and all for *sport*.

MR. J. W. Mellor, as leader of the A.O.U. expedition to Kangaroo Island last October, when the picturesque falls on Middle River were christened "Strepera Falls," because a pair of Black-winged Crow-Shrikes had a nest in a tree near the top of the cascade, informed the Surveyor-General of the incident. The following reply has been addressed to Mr. Mellor:—

"Surveyor-General's Office, S.A.,

"Adelaide, 19th December, 1905.

"Sir,—I have to acknowledge receipt of your letter of the 15th inst., and to inform you that 'Strepera Falls' will be adopted as the name for the falls on Middle River, Kangaroo Island, as suggested by you.

"I am, sir,

"Your obedient servant,

"W. N. STRAWBRIDGE, Surveyor-General."

INTRODUCTION OF AUSTRALIAN MAGPIES TO CEYLON.—Mr. Herbert Campbell, of Yalta, Nuwara Eliya, Ceylon, is desirous of introducing Magpies—"one of the finest birds in existence," in Mr. Campbell's opinion—on to his plantation, which stands about 6,200 feet above sea-level, with a climate like a cool English summer. Writing to one of the editors of *The Emu*, under date of 31st December, 1905, Mr. Campbell states:—"Nine Magpies (the Black-backed species) reached me this morning by the early train—all in excellent condition, except that one appears to be a little cramped about the feet. I put them at once into a large outhouse (with a window) pending the erection of an aviary where they can await the growth of their wings. I gave them raw meat and worms, which they evidently appreciated, and a big bowl of water, where they at once began washing, and then I turned them all out in the sun to preen. We were much amused to find them absolutely fearless—even with a dog!

"I do hope they will do all right here. The fine weather is just setting in, with white frosts at night, so that they ought to find it much like the hill climate of New South Wales. I fancy they will probably regard June to September as the winter, as we have cold rains then, but no frost. The frosts now, however, are so very mild that they only serve to brisk up the air.

"I have addressed the Secretary of the Agricultural Society, requesting him to memorialize Government in order to get them protected. I spoke to him privately on the subject the other day; and I have no doubt the Government will comply, as the insects and grubs in this island are a fearful pest. If it is decided that they prove beneficial, I hope the Government itself will take in hand to import a lot more.

"There is one great advantage in Nuwara Eliya. During the S.W. monsoon they have only to fly about 4 miles in one direction, and during the N.E. 4 miles in another, to get into dry country. So that they can choose their climate. In both these cases, too, they will find themselves below the frost-level. They will therefore have every opportunity to multiply. I fancy they are big and fierce enough to defend their nests against wild-cats."

AT the June (1905) meeting of the Linnean Society of New South Wales (according to *The Proceedings*) Mr. North sent for exhibition—(1) An adult female *Cuculus intermedius* received by Mr. J. H. Thorpe from James Yardley, who procured it on Dungay Creek, Tweed River, N.S.W., in August, 1902; a specimen was procured in 1904 by Dr. Hamilton Kenny near Gympie, Queensland. (2) An adult male of *Ptilotis plumula*, obtained in July, 1883, by the late Mr. K. H. Bennett, at Moolah, western New South Wales. And (3) the following sets of eggs:—(a) From Mr. A. E. Ivatt's collection, an egg of the Warty-faced Honey-eater, taken by him at Glanmire, near Bathurst, on 12th November, 1894, and with it in the same nest an egg of the Pallid Cuckoo; (b) from Mr. Leslie N. Moore's collection, an egg of the Fulvous-fronted Honey-eater, and one of the Pallid Cuckoo, taken by him in the nest of the former at Loftus, on 3rd November, 1900, and three eggs of the Yellow-throated Miner, and one egg of the Pallid Cuckoo, received by him from New Angledool, and taken together from the same nest, September, 1901.

AT the September (1905) meeting of the same society (as recorded in its *Proceedings*) Mr. A. J. North exhibited a skin and set of two eggs of *Melithreptus albigularis*. They were obtained at Copmanhurst, on the Clarence River, New South Wales, by Mr. George Savidge, who also forwarded a nest he had procured on the 22nd instant. Altogether three birds in the flesh had been received. Previously this species had not been recorded from further south than Wide Bay, Queensland. In the "Catalogue of Birds in the British Museum" (vol. ix.), Dr. H. Gadow regards *M. albigularis* as only sub-specifically distinct from *M. lunulatus*. There is, however, no intergradation between these two birds, and in addition to the olive-yellow upper part and white chin of *M. albigularis*, it is furthermore distinguished by

having the bare skin above and behind the eye dull greenish-blue, which in *M. lunulatus* is rich orange-scarlet. Of curious nesting sites of the Rock-Warbler (*Origma rubricata*) Mr. A. F. Hull informed Mr. North that a pair had built their nest round a piece of string hanging down inside from the roof of a tent at Freshwater, Manly. This tent, the entrance to which was partially concealed by a rock shelter, was occupied from Saturday to Monday, and every other night, by several youths, but the birds, unconcerned at their presence, had finished the nest, and the female had since the 17th inst. been sitting on a full complement of eggs. Last year, Mr. Herbert E. Ross informed him, a pair had built their nest in a small cave that had been fitted up as a dark-room for photographers, in the rocky and spacious grounds of a well-known resort at Medlow, on the Blue Mountains. At Lane Cove Mr. Arthur Muddle found a nest last year attached to the timbers beneath the verandah of a waterside cottage, and in the same locality several seasons ago Mr. Edgar R. Waite saw a nest containing young attached to the roof inside a bathing-box at Longueville.

### Hutton Memorial Research Fund.

A CIRCULAR has been issued by the Philosophical Institute of Canterbury, Christchurch, New Zealand, stating it has been resolved by the Institute that it is desirable that, in memory of Captain F. W. Hutton, a fund be established, to be known as the "Hutton Memorial Research Fund," devoted to the encouragement of original research in Natural Science in New Zealand, such fund when established to be vested in and controlled by the Board of Governors of the New Zealand Institute. These resolutions were followed by a suggestion to the last-named body that, in addition to making grants from time to time to persons engaged in original research, a bronze medal be struck, to be called the "Hutton Medal," and to be awarded at suitable intervals to persons who have made original contributions of special value to the Natural Science of New Zealand. To save time the Philosophical Institute of Canterbury has commenced the collection of subscriptions for the purposes above mentioned, with the view of afterwards handing them over to the New Zealand Institute, and contributed £50 from its funds. The Philosophical Institute desires aid from all kindred bodies in this matter, than which there could hardly be a better method of perpetuating the memory of the late deservedly honoured president of the A.O.U. The Institute makes a special claim for contributions on the ground that, whilst the influence and importance of research is becoming

more and more fully recognized in all parts of the world, New Zealand has as yet taken no steps for its encouragement, and no financial assistance has so far been given to private workers in any department of science. When it is remembered that Captain Hutton unselfishly devoted himself throughout his lifetime to the advancement of Natural Science in New Zealand, and that no worker has done more to increase the world's knowledge of the geology, zoology, and botany of New Zealand than he did, it is peculiarly appropriate that his name should be associated with the first fund established in New Zealand for encouragement of further study of these subjects. We in Australia are almost equally indebted to Captain Hutton, having reaped a portion of the benefits of his work, and the appeal should have equal force here. Contributions should be forwarded to Dr. Chilton, hon. treasurer Hutton Memorial Research Fund, Canterbury College, Christchurch, N.Z.

### Publications Received.

*Auk, The*, XXIII., No. 1, Jan., 1906.

*Avicultural Magazine, The*, N.S., IV., Nos. 1-3, Nov., 1905-Jan., 1906.

*Bailey, Vernon*. Biological Survey of Texas. (U.S. Dept. of Agriculture, Biological Survey, North American Fauna, No. 25.)

*Bird-Lore*, VII., No. 6, Nov.-Dec., 1905.

*Butler, A. G.* (1) The Orange-billed Tanager. (2) The Duration of the Period of Incubation. (3) On British Wagtails in Cage and Aviary. (4) The Archbishop Tanager. (5) On Breeding *Turnix nigricollis* in German Bird-rooms. (6) Notes on the Grey-winged Ouzel. (7) On Breeding Hybrid Ouzels. (8) On the Acceptance or Rejection of Insects by Birds. (9) On Changes of Plumage in Some of the Typical Weaver-Birds. (10) On the First Primary in Certain Passerine Birds. (11) Notes on the Satin Bower-Bird. (12) The Development of the Adult Colouring in the Yellow-billed Cardinal from South America. (Reprints from Magazines.)

*Condor, The*, VII., No. 6, Nov.-Dec., 1905.

*Genera Avium*. Edited by P. Wytsman. Parts 1-5.

*Hawkesbury Agricultural College Journal, The*, III., Part 2, Jan., 1906.

*Linnean Society of N.S.W.*, Proceedings, XXX., Part 3.

*McGregor, Richard C.* (1) Birds from Mindoro and Small Adjacent Islands. (2) Notes on Three Rare Luzon Birds.

(U.S. Dept. of the Interior, Bureau of Govt. Laboratories, No. 34.)

*Ornithologisches Jahrbuch*, XVII., No. 1, Jan.-Feb., 1906.

*Osgood, Wilfred H.* A Biological Reconnaissance of the Base of the Alaska Peninsula. (U.S. Dept. of Agriculture, Biological Survey, North American Fauna, No. 24.)

*Philippine Journal of Science, The*, I., No. 1.

*Riley, J. H.* A New Sub-Species of Ground-Dove from Mona Island, Port Rico. (U.S. National Museum.)

*Skinner, K. L.* A List of the Birds of British India.

*South African Ornithologists' Union, The Journal of the*, I., Nos. 1 and 2, July-Dec., 1905.

*Zoologist, The*, Fourth Series, IX., Nos. 105-108, Sept-Dec., 1905, and X., No. 109, Jan., 1906.

## List of Members of the Australasian Ornithologists' Union, 1905-6.

The notification of any correction or change in address of members will be esteemed a favour by the Honorary Secretary.

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PERSONAL.—Mr. J. W. Mellor, Adelaide, one of the vice-presidents of the A.O.U., has been elected president of the South Australian Ornithological Association. Mr. Mellor was one of the founders of the Association, which is the oldest society in the Commonwealth for the study purely of ornithology. He was for six years its honorary secretary and treasurer, and is now to be congratulated on becoming its presiding officer.





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