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JOHN GOULD

From a Photo by Maul & Fox, London, 1875.

NESTS AND EGGS
OF
AUSTRALIAN BIRDS

INCLUDING THE
GEOGRAPHICAL DISTRIBUTION OF THE SPECIES
AND
POPULAR OBSERVATIONS THEREON

BY
ARCHIBALD JAMES CAMPBELL
MELBOURNE

With Map, 28 Coloured Plates and 131 Photographic Illustrations

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TO THE MEMORY OF THE TWO "G's,"

JOHN GOULD

AUTHOR OF "THE BIRDS OF AUSTRALIA")

AND

JOHN GILBERT

(HIS ABLE COADJUTOR),

WHO TOGETHER PERFORMED SUCH GREAT AND GOOD PIONEER
WORK IN AUSTRALIAN ORNITHOLOGY,

THIS BOOK IS HUMBLY DEDICATED BY

THE AUTHOR.

INTRODUCTION.

“WHERE THE BIRDS MAKE THEIR NESTS.”

“OF making many books there is no end; and much study is a weariness of the flesh.” But to write a book on any department of natural history—a portion of the “Bible of Nature”—is a privilege and a pleasure, “weariness of the flesh” notwithstanding. And what one has to write in this direction must be written soon, because, as Professor H. N. Moseley has pointed out regarding the study of the fauna and flora of any country, forms are perishing rapidly day by day, and will soon be, like the dodo or the moa, extinct. “The history of things,” he said, “once gone can never be recovered, but must remain for ever a gap in the knowledge of mankind.” It is the old proverb—“That which is wanting cannot be numbered.”

Since Gould’s “Handbook” to his great work, “Birds of Australia,” several lesser aids to Australian ornithology and oology have been issued under separate covers. These are, namely:—

1. Dr. E. P. Ramsay’s useful “Tabular List” of Australian Birds (1877). Second edition (1888).

2. A Manual by myself on “Nests and Eggs of Australian Birds,” embracing papers on “Oology of Australian Birds” read before the Field Naturalists’ Club of Victoria (1883).

3. Mr. G. J. Broinowski’s “Birds of Australia,” in six parts—illustrated (1887-91).

4. “Catalogue No. 12” of the Australian Museum; or “Nests and Eggs of Birds found Breeding in Australia and Tasmania” (1889), by Mr. A. J. North, F.L.S., &c.

5. And Mr. Robert Hall’s up-to-date “Key of the Birds of Australia and Tasmania (1899).”

My Manual was designed to show how much had to be done before anything like a complete work on such an interesting and important department as “Nests and Eggs” could be attempted. My fixed aim was towards a more complete and permanent work; and the result of that self-imposed task I now present to the public. By the light of

future research, shortcomings, no doubt, will be discovered here and there in the book—no human work was yet perfect—but the author ventures to hope that the sympathetic verdict of students and readers will be, "How few are the mistakes;" while his earnest desire is that the work may remain good long after his death, yea, and the deaths of all those who love him. Of course I could not have completed such an important task myself were it not for the able assistance of friends and correspondents (some of whom have been removed by death) in almost every corner of the Continent. One might just as well expect to construct a castle or build a big bridge alone. Moreover, as a good foundation, I have had the benefit of the labours of those worthies (some of them giants in their day) who have preceded me in the field (*i.e.*, Field Naturalists, as opposed to closet workers or systematists) of research.

Gould frequently mentioned to Professor Alfred Newton (Cambridge), that it was his intention to publish an Oology of Australia as a sequel to his great work, "Birds of Australia," and it is probable it was only the magnitude of his other undertakings—two or three of which were unfinished at the time of his death—that hindered him from putting his design into execution.

Regarding my work itself I have little to say, except to mention that the scientific classification and nomenclature are in accordance generally with the "Catalogue of Birds" of the British Museum; while the vernacular names, with few exceptions, may be found in the "List of Vernacular Names for Australian Birds," published by the Australian Association for the Advancement of Science. Since Gould's day, ornithology, like every other science, has advanced apace, consequently Gould's classification is somewhat obsolete. Besides, he himself said his was the classification of a "single country" only; whereas the British Museum Catalogue brings the birds of the whole world under review. It has been found necessary to alter many of Gould's vernaculars, in a number of which he simply repeated the scientific genus, for instance:—Little *Acanthiza*, Spotted *Sericornis*, while some were duplicated. "Pied" Crow Shrike occurs twice, as also does "Shining" Flycatcher, "Fasciated" Honey Eater, "White-throated" Honey Eater, "Beautiful" Parrakeet, and others.

Referring to the interesting study of Geographical Distribution, I obtained great assistance from Dr. Ramsay's "Tabular List," while the extra Australian localities are adopted almost entirely from the British Museum "Catalogue."

It may be also explained that the numerals on the right hand of the name of the species are referable to the numbers in Gould's "Handbook," and that I have endeavoured to describe typical eggs only, as concisely as possible without elaborated details; while any descriptions of birds must not be taken as strictly technical, but merely as a guide to the identity of the species under notice, in case of a reader or beginner being in doubt.

A retrospective glance will show the progress of Australian Oology. What with the discovery of new birds and the amalgamation of old forms, the total number of Australian birds remains at about 765 species. Gould's "Handbook" contained 262 descriptions of eggs, my Manual mentioned 413, while the present work brings the number up to considerably over 600, or all the known eggs.

Perhaps I cannot do better than here recite the names and deeds (in brief) of those who have preceded me at field work. Head and shoulders above all, of course, comes the giant Gould; and in writing the following remarks concerning him I have been guided by an excellent "Biographical Memoir" by Dr. R. Bowdler Sharpe in his "Analytical Index" to the works of the great author.

John Gould was born at Lyme, in Dorsetshire, England, 14th September, 1804, and, when quite an infant, his parents went to live at Stoke Hill, near Guildford; and it was in this beautiful neighbourhood that the child first imbibed his notions of the beauty of natural life. When young Gould was 14 years of age, his father received a good appointment in the Royal Gardens at Windsor, where the boy assisted him in gardening. By this time he had begun the study of birds, and made his first acquaintance with many British species in the royal domains. He was also reported to be a good taxidermist.

In 1827, Gould obtained some kind of appointment at the Zoological Society, then in its infancy. A year or two after receiving this appointment, he married Miss Coxen, daughter of Nicholas Coxen, a Kentish gentleman, and to this lady (it often happens that the wife makes or mars the man) is due much of the ultimate success of her husband's career, for she was an accomplished artist, and painted no less than 600 of his bird pictures.

In 1832 Gould's first work, the "Century of Birds from the Himalaya Mountains," was published. Shortly afterwards he left the service of the Zoological Society. In 1837 appeared his first Australian work, the "Synopsis of the Birds of Australia," wherein were figured the heads of most of the species of birds known to inhabit our Island Continent up to that time.

In 1837 Gould also commenced to publish his "Birds of Australia," a second part of which bears the date 1838; but he soon found that he had not sufficient material to carry on the work as he wished to do. He therefore boldly conceived the notion of going to Australia with his wife, for the sole purpose of procuring the specimens necessary for the completion of his gigantic enterprise. The work was therefore stopped after the appearance of Part II. The two cancelled parts of "Birds of Australia" are amongst the rarest of his works.

Gould, accompanied by Mrs. Gould and their eldest son, left England for Australia in May, 1838, and returned August, 1840. He first landed in Tasmania, then proceeded to South Australia, and returned to Tasmania. He lastly visited New South Wales. Thence he returned home via Cape Horn, thereby completing a circuit of the Southern Seas, which greatly helped him in doing his important work amongst the Petrels, a family to which he paid especial attention.

The number of species of Australian avifauna was raised from 300 to 600 by the adventurous journey of Gould and his able assistants—a gigantic undertaking in those early days. The trip cost him £2,000 out of the £7,000 he is said to have accumulated by his former publications before leaving for Australia. On his return home, Gould at once recommenced his immortal work on the "Birds of Australia," the first part of which appeared in 1840, and in 1848 the seven volumes, with 600 plates, was completed. It is obvious that the literary finish of the letterpress was due to his able secretary, Mr. E. C. Prince. Gould always deplored the loss of three valuable lives that occurred over the production of the "Birds of Australia," namely, John Gilbert, killed by the natives in the Gulf of Carpentaria district; Johnson Drummond, also killed by a native while seeking specimens in Western Australia; and a fine young man, one of Gould's attendants assigned to him by Sir John Franklin, Governor of Tasmania, who was accidentally killed by the explosion of a gun he was removing from a boat, when landing on one of the islands in Bass Strait.

In 1851, the first part of the "Supplement to the Birds of Australia" was published, and this was finished in 1869. Between these dates, or in 1865, the exceedingly helpful "Handbook," in two volumes, appeared.

While in Australia, Mrs. Gould resided for some time with Sir John and Lady Franklin; and at Government House, Hobart, the youngest son, Charles, was born, who, strange to say, afterwards became Government Geologist for a time in his native colony.

Within a year of his return to England, Gould had the misfortune (the greatest that could befall him) to lose his wife, a shock from which he never recovered, and his later years were further saddened by the loss of two of his sons, both of whom had adopted the medical profession.

It is now a matter of history how Gould offered the whole of his Australian collection of birds and eggs to the trustees of the British Museum for £1,000 (after spending £2,000 on the expedition), or as a donation if they would purchase twenty-five copies of his work. The collection contained examples of both sexes of nearly every known species of Australian birds, and mostly original types—1,800 specimens in all,—carefully labelled with full data. It was a national calamity that the offer was declined, and, under the chagrin at the unexpected refusal of his offer to the nation, Gould immediately accepted £1,000 for the collection tendered by Dr. Thos. B. Wilson, of Philadelphia, for the Academy of Natural Sciences of that city.* Great Britain's loss was America's gain.

Besides being a keen ornithologist, there was business in Gould's methods. At the great exhibition of 1851, he obtained permission to erect a building at the Zoological Gardens, and to exhibit his twenty-four cases of mounted Humming Birds, his own handiwork. We are told that when the season was over, the building demolished and its materials sold, Gould found himself with a clear profit of £800. (The admission was sixpence.)

As a man of business Gould was punctilious, making it a rule to pay for all the work directly it was delivered, and herein lay much of the secret of his being so well served.

Coming nearer to the great author's individuality, those persons who remember him in his early days say he was a man of singular energy, with a good knowledge of the art of mounting animals. Considering Gould was self-taught, his talents for sketching the details of a bird picture were remarkable, and, although he had excellent interpreters in his wife, and, afterwards, in artist friends, still his was always the moving spirit in designing the plates or the rough sketches.

Dr. Sharpe, who was associated much with Gould in his latter days, when he (Gould) was invalided (with bladder complaint), and, as is well known, assisted him in the preparation of the "Birds of New Guinea," and after his death completed some of his other works, says that "In

* A complete catalogue of Gould's collection of Australian Birds in the Academy is likely to be published shortly. Out of 391 names given by Gould to Australian birds the types of no less than 321 are said to be in Philadelphia.

manner Mr. Gould was always somewhat brusque, but those who were intimate with him were aware that under a rough exterior he concealed a very kind heart." Another friend who knew him well, wrote: "He had a really tender and affectionate heart, hidden though it was beneath a highly sensitive reserve, which never permitted him the relief of expression. The deaths of his loving wife and two promising boys affected him in a way hardly known outside his family circle." Another person who used to work for him said Gould was "an extraordinary man; blunt, and somewhat of a gruff nature; had great perseverance, and was always at his work, which amounted to a passion, or to which he appeared a willing martyr." We are not told what Gould's religious temperament was, although he was styled "a true Priest of Nature."

As a born ornithologist, Gould had few, if any, compeers, and no one had a better "eye" for specific differences. As an author he was also a giant, having published between 1829 and 1880 (the year of his death) eighteen great illustrated folio works, besides no less than 302 separate papers and articles contributed to various learned societies, &c. The magnitude of his folio works may be understood by the 3,000 odd coloured plates they contained (all birds except 227, which figured in his "Family of Kangaroos" and the "Mammals of Australia"), and on account of which he has sometimes been called the "Pictorial Ornithologist." He himself loved to be called just plain "John Gould, the Bird Man."

Such was the man whom Australian ornithologists all but worship.

Little seems to be known of the early history of John Gilbert. He was apparently a taxidermist in the employment of Gould, who sent him as collector to Western Australia, August, 1840. He returned to England with his trophies, September, 1841.

The ensuing spring Gilbert again visited Western Australia, and afterwards Northern Territory at Port Essington. Subsequently he was attached to Dr. Leichhardt's Exploring Expedition from Brisbane to Port Essington, October, 1844, meeting his fate at the hands of treacherous natives, 28th June, 1845. The details of his tragic end I have given under the heading of the Black-backed Tree Creeper (see Observations). It appeared to me to be the most fitting place to recall the sad circumstances, as that bird was probably the last he ever shot.

Touching poor Gilbert's melancholy end, Gould pathetically wrote: "I lost a most able coadjutor, and science has to deplore one of its most devoted servants." What a tribute of praise from a master!

Ladies, by intuition, are generally good judges of character.

Mrs. Robert Brockman, of Guildford, Western Australia, has kindly written for me the following concerning Gilbert's private disposition. She says: "You ask me to give you whatever information I can about Mr. Gilbert. He was in the York district, collecting birds, also their nests and eggs for Mr. Gould's large work, 'The Birds of Australia,' and, in the course of his travels, one day came to 'Woodside,' and, as a matter of course, was asked to stay and rest. We liked him so well, that we told him to consider our house his head-quarters whenever his occupation brought him within reach of us; and he was a great deal with us while after the birds he was in search of.

"He used to go out after breakfast, provided with some luncheon, and we seldom saw him until late in the afternoon, when he would come in with several birds and set busily to work to skin and fill them out before dark. In the evenings he used to sing for us, and it was a great treat to hear his lovely voice, for such a beautiful tenor voice was rarely heard in those days. He had a good selection of songs. The opening verse of one of his favourites was:—

'No more shall the children of Judah sing
The lay of a happier time,
Or strike the harp with the golden string,
'Neath the sun of an Eastern clime.'

"He was an enthusiast at his business, never spared himself, and often came in quite tired out from a long day's tramp after some particular bird, but as pleased as a child if he succeeded in shooting it.

"We became very friendly, and were much grieved to hear of his sad death. Strange to say, he always had a dread of blacks, even in our quiet place. He told me he was a widower, and spoke in very loving terms of a little daughter he had left in England.

"I wish I could recollect more about him; I shall only add once more that we all liked him much and thought highly of him. I remember his face now perfectly, as he used to look when he came in and threw off his heavy pack. He would say: 'Now for a sup of your nice tea and I shall be all right.' I think he was, altogether, nearly two months in our neighbourhood; then he travelled on towards Toodyay."

Gilbert has been further described as having been a pleasing and bright companion. In stature he was somewhat short and spare, but strong and very active. His complexion was rather dark than fair.

John Macgillivray, to whom Gould was indebted for so many of his north-eastern novelties, was naturalist on board H.M.S. "Rattlesnake," commanded by Captain Owen Stanley. Macgillivray afterwards wrote

a "Narrative of the Voyage," which was an account of a surveying cruise of about four years (1846-50), in the rich region of the Cape York Peninsula and contiguous localities, and included his own original field notes, graphically written, of the finding of rare and new Australian birds.

J. R. Elsey (afterwards Dr., I believe), who accompanied the Gregory Brothers' Expedition, did pioneer collecting in the rough north-west.

The Ramsay Brothers, of Sydney, may be said to have gathered the first Australian oological collection, which became known as the "Dobroyde" Collection. It was of great value and interest as a pioneer one, but to compare it (if it is still intact) with the splendid and more recent collections would possibly be to over-rate it. Dr. E. P. Ramsay became the clever curator of the Australian Museum, Sydney, but, unfortunately, just as he was gaining fame in the ornithological world, he was retired on account of ill-health. It was as if his sun had set while it was yet noon, for all had hoped to see Dr. Ramsay amongst Australian ornithologists what Baron von Mueller was amongst botanists.

Kendall Broadbent, the veteran collector, now attached to the Queensland Museum, has traversed the whole of Eastern Australia, including Tasmania, after specimens. His principal trips and dates thereof are:—Portland Bay (1858); Gippsland (1862); Brisbane Scrubs (1864); Darling Downs (1865); Cardwell and "Maria" Expedition to New Guinea (1873); Cape York, Gulf of Carpentaria and New Guinea (1874-75); Cairns and New Guinea (1878-9); Tasmania and South Australia (1879-80); five trips to Cardwell (between 1880-90); Charleville (1883); Cape York and Gulf of Carpentaria (1883-4); Barealdine and Central Queensland (1887); and Bellenden-Ker Range (1889).

What a delightful education the sum total of these bush experiences must have been to Mr. Broadbent! Though not an Australian by birth, Mr. Broadbent was reared in Victoria. He enjoys the reputation of being an indefatigable collector, never giving up the chase, night or day, if he can attain the specimen sought after.

Another old and respected collector is George Masters, curator of the Macleayan collection, Sydney University.

Dr. George Bennett, in his interesting work, "Gatherings of a Naturalist in Australia" (1860), furnishes field observations of many familiar birds; while "Old Bushman," wrote the pleasant little volume, "Bush Wanderings of a Naturalist" (1861).

"Old Bushman," otherwise Horace William Wheelwright (son of an English clergyman), was educated and practised as a solicitor. From

boyhood he was fond of field sports of all kinds. Getting into disgrace over a horse-racing incident (one cannot touch pitch without soiling one's hands), he quitted England for the wild mountains and woods of Norway and Sweden. Subsequently he resolved to have "a spell" in a more sunny clime, and turned his attention to Australia. Mr. Wheelwright arrived in Victoria, March, 1853; and, like thousands of others at that time, departed for the gold diggings, but was unsuccessful. He became acquainted with Mr. C. J. Stafford, like himself, of a naturalist turn of mind, and, as mates, they camped for about five years (1853-8) at Mordialloc, now the popular sea-side resort, 16½ miles by rail from Melbourne. The exact spot of the camp was between the road and the beach, just opposite the railway station. For sport and livelihood they shot game in that district and in Western Port for the market; and it was that period of five years which constituted Mr. Wheelwright's "Bush Wanderings," wherein he mentions one hundred and ninety species of birds (giving the habits of some), twenty-two animals, besides reptiles, fish, and insects. When Mr. Wheelwright gave up camp life, he immediately sailed for England, writing up his notes on the passage home.

Sylvester Diggles (Queensland), an artist and musician by profession, was an entomologist as well as an ornithologist. He was enthusiastic, patient and persevering. During his twenty-two years of research, he painted no less than six hundred Australian birds and wrote descriptions thereof, but owing to the want of sufficient funds, only a portion was published, under the somewhat ambitious title, "The Ornithology of Australia." It was his death-blow that the Government would not assist him. Truly it has been written, "a prophet is not without honour save in his own country."

Mr. Diggles was one of the first promoters of the Philosophical Society of Queensland. He died 21st March, 1880.

Thomas Henry Bowyer-Bower (son of Captain Bowyer-Bower, England) indirectly sacrificed his life in the interests of ornithology. He collected some seven hundred bird skins in the neighbourhood of Derby, North-west Australia. Of that number, unfortunately, two hundred were burnt by a bush fire. It was Mr. Bowyer-Bower's intention to return the following dry season (winter) to make good his loss and to supplement his notes; but alas! he contracted typhoid fever, and died at Port Darwin, 23rd December, 1886, at the early age of 24. Mr. Walter Burton (Wardour Street, London, W.), who accompanied Mr. Bowyer-Bower as professional

naturalist, writes: "He was one of the finest young fellows it has been my good fortune to meet. Of course, as you are aware, you cannot make social distinctions where all share the common dangers and vicissitudes of bush life, but I can most feelingly say I was treated by him more as a brother than a servant."

A list, with remarks on the Bowyer-Bower collection, by Dr. E. P. Ramsay, is recorded in the Proceedings of the Linnean Society, New South Wales (2nd series), vols. i. and ii. (1886-7).

Possibly no Australian field naturalist spent more time and money in the pursuit of ornithology than did Mr. Samuel White, of the Reedbeds, near Adelaide, South Australia. Yet it is remarkable that Mr. White's name, although he kept very complete diaries, was never famous for research, except as to a few notes with which he supplied Gould.

His first lengthened trip, occupying seven or eight months, was undertaken in the early sixties. Mr. White had signed an agreement to accompany the Burke and Wills Expedition to cross the Continent, but, owing to the quantity of luggage he would need for collecting purposes, a disagreement arose, and Mr. White decided to set out on an expedition himself. So taking a single companion, he started in a spring dray with two horses and made north to Lake Hope, and beyond towards the Gulf of Carpentaria country. Great privations were endured. The horses perished from the want of water, as nearly did their drivers. Consequently almost all specimens were abandoned in the interior. The egg of the Spotted (Jardine) Harrier, described by Gould as having been collected at Lake Hope, was one of the few remaining relics of the disastrous journey.

The next trip of adventure was a general collecting tour in Queensland, 1867, when Mr. White was accompanied by a younger brother, William. They landed at Cleveland Bay (now Townsville), journeying inland towards the Flinders, steering their course with the aid of a map and compass, the former being worse than blank. Here, too, they nearly succumbed to thirst, and had given up all hope, when they heard the call of a Satin Bower Bird, and knew water must be near. Samuel, just able to crawl on his hands and knees, succeeded in finding the precious element, filled the billy, and so revived life. The explorers were then able to make Port Denison for fresh supplies, and proceeding down the coastal region, passed over the Dividing Range (McPherson's) at Mount Lindsay, being the first white men to climb to the topmost pinnacle of the Mount.

Thence their course was to Newcastle. The trip occupied over twelve months. The worst has to be told. In crossing a swollen river in an improvised punt, the primitive cart (which was merely a box on two wheels with a pair of shafts attached, and in which all the natural history collection was packed) capsized, and the greater portion was lost in the flood; while, to add to this misfortune, the powder they possessed became wet and useless, so that more collecting was out of the question. At this point, also, the blacks were very numerous and warlike, and an attack of scurvy added to the intrepid explorers' trouble.

The last and most ambitious trip cost Mr. Samuel White his life.

First he built a steamer at Port Adelaide, and after £500 was spent in England in machinery alone, it was found she was unsuitable for his purpose. Then he built a fore and aft schooner called the "Elsie" (named after his wife), and fitted her for a two years' cruise in the region of Cape York, New Guinea, and the Aru Islands. Some interesting collecting was accomplished at the Arus; but the crew, objecting to work in New Guinea, which was a dangerous quarter at that time, mutinied, locked Mr. White in his cabin, and turned the ship about, shaping a course for Thursday Island. The ship thus in their hands, the mutineers became overjoyed, broached the store of spirits and got intoxicated. Taking advantage of this state of affairs, Mr. J. Cockerell and Mr. F. W. Andrews (two of Mr. White's collectors), released him. With some difficulty the crew were secured, but not before they had smashed the binnacle.

Mr. White navigated his vessel back to Thursday Island, where the crew were tried and committed, the ringleaders, including the Captain and first mate, being remanded to Sydney. Leaving the vessel at Thursday Island, Mr. White took the first opportunity of returning to Sydney for a fresh crew. At Sydney he met his wife, and when looking for a suitable temporary residence was caught in a heavy thunderstorm, took a severe chill (possibly on account of his system having been run down by the worries of the expedition), died on the 16th November, 1880, and was buried in the Waverley Cemetery.

Disaster followed disaster. The vessel, lying at Thursday Island, Cape York, was pillaged; the collections of a lifetime were knocked down and scattered under the auctioneer's hammer at Adelaide; and, most deplorable of all (next to the ornithologist's untimely death), some of Mr. White's numerous diaries, which no doubt it was his intention to eventually publish, and which must have contained a vast fund of

original information, not to mention thrilling adventure, most mysteriously disappeared. However, his son, Mr. C. A. White, is now endeavouring from personal notes and private letters to publish a book on the last adventurous trip.

On account of Mr. White's devotion as a field ornithologist and collector, and before all the birds of this great Island Continent have been discovered and named, it is hoped that some author will dedicate one species at least to his memory.

There have also been distinguished foreign field collectors to our shores, namely:—Dr. Carl Lumholtz, whose interesting bird notes are recorded in the account of his travels "Among Cannibals in Northern Queensland;" and Dr. Knut Dahl (both Norwegians), who more recently visited the North-west and Northern Territory.

I shall conclude my "cloud of witnesses" by naming two early collectors, who met premature deaths at the hands of treacherous natives: Johnson Drummond (already mentioned under Gould), who was killed in Western Australia; and F. Strange, of Sydney, who was murdered by the aborigines in the Wide Bay district, Queensland, about July, 1846. He was one of Gould's collectors, and had just returned from Europe by a vessel called the "Vimiera." An account of his tragic death appeared in the "Sydney Morning Herald."

Should I have overlooked names of other worthy forerunners in the field, such omissions must be regarded as purely unintentional on my part, or as caused by the absence of the necessary data; while of my own immediate contemporaries I have nothing to say. Time alone, that wondrous adjuster of relative merits and demerits, will impartially judge us all.

My votes of thanks. They are too numerous, and beyond the scope of this introduction to be all enumerated, and it would be invidious even to mention some of the many persons who have aided my work by signal services in the field. But as the names of collectors and others appear throughout this book, I hope that will be sufficient acknowledgment for the respective notes or specimens they have been so good as to supply me with.

I take this opportunity, however, of expressing my indebtedness to the proprietors of "The Australasian" for so persistently publishing for many years my articles on "Some Australian Birds." Of course these articles, as they must necessarily have been, were merely sketches, but sketches, nevertheless, which have done a great deal to popularize

ornithology in Australia, and so prepare the way for a more permanent and elaborate work. My particular thanks are also due to the editor of that paper, Mr. David Watterson, for his encouragement to me in my work, and for his many kindly and unassuming hints as to shaping my thoughts on paper, more especially for readers not naturalists.

To Mr. C. C. Brittlebank my best thanks are due for his unselfish labours in figuring the original coloured drawings of the two hundred typical or rare eggs needed for this work. It was indeed fortunate for me that Mr. Brittlebank combined the tastes of a naturalist with his artistic skill in the productions. Here let me say we decided not to figure white eggs, which are mainly identified by the grain of the shell, which it is impossible to reproduce in an illustration (except, perhaps, by photography). To have given plates of white eggs would have been to unnecessarily handicap the work. While on the subject of illustrations, I venture to hope that the photographic ones will not be the least attractive feature of this volume. To Mr. L. W. Hart, Working Men's College, Melbourne, I shall be for ever indebted for his sound instruction in the art.

I have to thank Mr. Edward A. Petherick, F.L.S., of London, whose interest in Australian literature is well known, for his hearty co-operation and invaluable assistance in the production of this work in England; and last, but by no means least, I here record my sincere thanks to my subscribers individually and collectively for having so materially assisted the book by finding the honest hire for the printers, Messrs. Pawson & Brailsford, Sheffield, England.

My doxology. No work should be complete without praise to God, and perhaps more especially no Natural History Work, such as I am now closing, and in the execution of which the lines have fallen to me in so many pleasant places.

“O Lord, how manifold are Thy works! in wisdom hast
Thou made them all: the earth is full of Thy riches.”

MELBOURNE, Dec., 1899.

SYSTEMATIC INDEX.

ORDER—ACCIPITRES: BIRDS OF PREY.

SUB-ORDER—FALCONES: FALCONS

FAMILY FALCONIDÆ: HAWKS.		Plate.	Page.
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Grey Goshawk (<i>Astur cinereus</i>)	—	4
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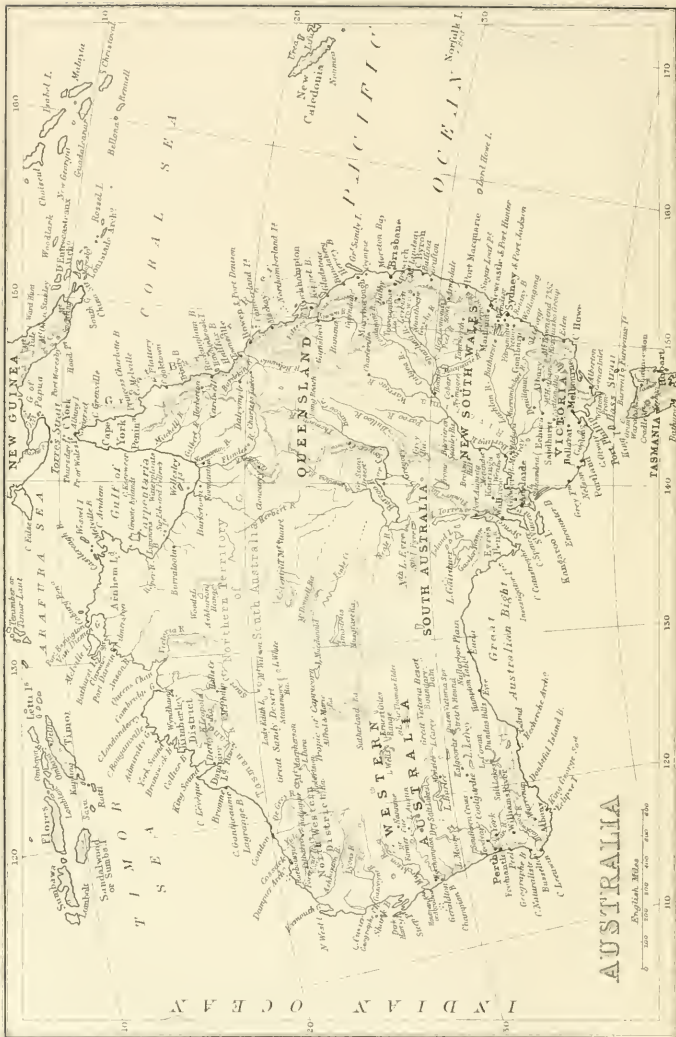
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Nests and Eggs of Australian Birds.

ORDER—ACCIPITRES: BIRDS OF PREY.

Sub-order — Falcones : Falcons.

FAMILY—FALCONIDÆ: HAWKS.

SUB-FAMILY—ACCIPITRINÆ: LONG-LEGGED HAWKS.

1.—CIRCUS ASSIMILIS, Jardine and Selby.—(27) *C. jardinii*, Gould.

SPOTTED HARRIER.

Figure.—Gould: Birds of Australia, fol., vol. i, pl. 27.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 63.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 60 (1865); North: Austr. Mus. Cat., p. 1, pl. 2, fig. 4 (1889); Campbell: Proc. Austr. Assoc. vi., p. 418 (1895).

Geographical Distribution.—Australia in general and Tasmania; also Celebes.

Nest.—Somewhat flat, loose structure, composed of sticks and twigs, and lined sparingly with leaves plucked when green. Usually situated in a tree.

Eggs.—Clutch, two to three, probably four occasionally; roundish or round oval in form; texture of shell somewhat coarse; surface without gloss; colour, bluish-white. Inside lining cold or dark green, differing from the lining of those of *C. gouldi*, which is lighter green. Dimensions of a clutch from Queensland: (1) 2.06 × 1.5, (2) 2.05 × 1.5, (3) 2.0 × 1.56. Of a proper pair from Western Australia: (1) 1.96 × 1.64, (2) 1.94 × 1.57.

Observations.—This handsomely marked Hawk, although plentifully distributed over some interior and western localities, is not so frequently noticed as the more familiar Swamp Hawk, from which it may be at once distinguished by the beautiful white spotted nature of its plumage. However, immature birds commence with only a few faint spots on the feathers of the flanks, or on the under tail coverts, before the beautiful adult spotted dress is assumed. The bird is occasionally seen in Victoria, but in its western habitat it is common, nevertheless exceedingly shy. The Spotted Harrier hunts for food (chiefly lizards) over the ground with a leisurely flapping flight, and will lie close on a hot day in the shade of a bush or tree. It is evident the Spotted Harrier does not nest upon the ground

like the common Harrier, as the following interesting information, furnished by Mr. Harry Barnard, shows:—His notice was first attracted by a pair of these fine Harriers examining Magpies' (*Gymnorhina*) old nests, and mating. Soon afterwards they commenced building in a silver-leaved iron-bark (*Eucalyptus melanophloia*), at intervals extending over six weeks, a nest which at best was only a frail, flat structure lined with leaves. When the clutch reached the number of three, the eggs were taken, the date being the end of September, 1893. Locality: Coomooboolaroo, Queensland. Subsequently, on the same run, Mr. Charles Barnard took another clutch of Spotted Harrier's eggs from a nest about forty feet from the ground in a large bloodwood (*Eucalypt*). On the other side of the Continent, near the North-west Cape, Mr. Tom Carter tells me in the autumn of 1898 he noticed a pair of Spotted Harriers building a nest in a low tree, about ten feet from the ground. Just before shearing, he hurriedly visited the place, but not seeing the birds about he concluded the nest was deserted. However, he afterwards discovered two other nests with three eggs and one (half-hatched) respectively, and while at Cardabia Creek he found another nest in a white gum, about twenty feet from the ground, with two half-grown young. Mr. Carter, in a matter-of-fact style, states, "I should have liked to have skinned them, but being on the 'pot hunt,' my native and I only having had a wild cat between us for supper and breakfast, we each ate a young bird for lunch."

I am indebted to Mr. Carter for a fine pair of eggs dated August 17th, 1898.

On the 18th August, 1896, at the commencement of the Calvert Expedition in Western Australia, Mr. C. F. Wells found a nest of the Spotted Harrier containing two eggs. On the 25th September, Mr. L. A. Wells found a second nest, with a pair of eggs slightly incubated. Both nests were situated in gum trees.

2.—CIRCUS GOULDI, Bonaparte.—(26)

C. assimilis, Gould.

HARRIER OR SWAMP HAWK.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 26.

Reference.—Cat. Birds. Brit. Mus., vol. i., p. 72.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 59 (1865); Potts: Trans. New Zealand Inst., vol. ii., p. 52 (1870); Buller: Birds of New Zealand (1873), also vol. i., p. 212 (1888); North: Austr. Mus. Cat. p. 2, pl. 2, fig. 3 (1889); Campbell: Proc. Austr. Assoc. vol. vi., p. 417 (1895).

Geographical Distribution.—Australia and Tasmania, also Lord Howe and Norfolk Islands, New Zealand, New Caledonia, and Fiji Islands.

Nest.—Built of coarse, dry herbage—stalks of thistles, dock, &c.; sometimes of sticks and twigs, and lined with short pieces of hay-like

swamp or other grass. Structure is somewhat flat, about 7 inches high by 16 inches across. Situation, usually upon the ground amongst rank herbage, in rushes, or in grain crops, but sometimes on a low bush.

Eggs.—Clutch, three to five; inclined to oval in shape; texture of shell coarse, with the surface lustreless; in some clutches, rough with small limy excrescences; colour, white, except in cases of dirt-stains received in the nest during incubation. When emptied and held up to the light the interior of the shell possesses a beautiful sea-green appearance. Eggs are apparently small for the size of the bird. A clutch taken on Pentland Island, Murray district, Victoria, 4th December, 1890, measures in inches: (1) 2.09 × 1.51, (2) 2.08 × 1.5, (3) 1.96 × 1.51. The fourth egg is abnormally small, being only 1.47 × 1.12.

Observations.—When on outstretched wings, Swamp Hawks appear large birds, and, as their name implies, they are found in swampy localities, and may usually be seen in such places in almost any part of Australia, hawking or hunting, as if lazily, with slow and somewhat heavy motion of the wings over the tops of rushes growing in lagoons, or skimming and wheeling over plains and grassy flats. They feed on almost anything—birds (including their eggs), snakes, and other reptiles, &c. Unlike the majority of Hawks, which perch on trees, the Swamp Hawks are of a more pastoral disposition, selecting a "rise" on the plain, a large stone or, perhaps, a stump of a tree. The plumage of the Harrier on the upper surface is rich dark brown, some of the feathers being margined with reddish-buff, the face is light reddish-brown, with all the rest of the under-surface buffy-white, with a dark stripe down the centre of each feather; eyes are yellow; bill, brown, becoming paler at the base. Total length, about 20 inches; wing, 15½ inches; and tail, 10 inches.

Of the birds of prey, probably the eggs of the Swamp Hawk are the most common in our collections, for the reason that the nests being on or near the ground are easily taken, whereas the general run of our Falconidae breed aloft in some tall forest tree. Moreover, Swamp Hawks enjoy an extensive range, including many extra-Australian localities. Sir Walter Buller records that the Harrier or Swamp Hawk often returns to the same nesting-place for several successive seasons, the old nest forming a foundation for the new one, and that the young are very savage when molested, throwing themselves on their backs and striking out vigorously with their talons at the intruder.

The late Mr. T. H. Potts sent the following New Zealand note to the *Zoologist*:—"In November, 1884, in one of the large swamps in the Hind district of the Canterbury Plains, a nest of the Harrier, built on a large tuft of coarse growing rushes, was knocked over by a mob of cattle. The nest being set up again and the eggs put back, the Hawk returned and resumed incubation. The nest contained five eggs. Another nest in the Hiororaki district also contained five eggs." Clutches of five have also been taken by Tasmanian collectors.

Principal breeding months include September to December or January.

3.—*ASTUR CINEREUS*, Vieillot.—(14)

GREY GOSHAWK.

Figure.—Gould: Birds of Australia, fol., vol. i, pl. 14.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 117.

Previous Descriptions of Eggs.—Campbell: Nests and Eggs Austr. Birds, p. 3, pl. 1, fig. 14 (1883), also Proc. Austr. Assoc. vol. vi., p. 419 (1895); North: Austr. Mus. Cat., p. 2 (1889)

Geographical Distribution.—Australia in general.

Nest.—Stick-made structure, lined with leaves, usually green, and placed in a lofty tree.

Eggs.—Clutch, two to three; oval in shape; shell slightly rough, with surface almost lustreless; colour, white, with a perceptible bluish or greenish tinge, sparingly marked with a few smudges and other smaller markings of reddish-brown. The markings may be easily removed by moisture. Dimensions in inches of a clutch: (1) 2.02 × 1.51, (2) 2.01 × 1.51.

Observations.—Our knowledge of the breeding habits of this beautiful Goshawk is not very extensive, nor are its eggs found in many collections. Those I first described (now redescribed above) were taken (1880) by a son of my deceased friend, the enthusiastic collector Mr. H. A. Smith, of Batesford, near Geelong.

Mr. A. J. North informs us that "the nest of *A. cinereus* (the large Continental form of the White Goshawk) is an open structure, composed of thin sticks and lined with twigs and leaves. One found near the Cape Otway Forest, Victoria, was placed in the topmost boughs of a lofty eucalyptus, and contained two eggs; in form nearly oval; slightly swollen at one end; of a dull, bluish-white, smeared and blotched with faded markings of reddish and reddish-brown, particularly towards the larger end, and which, were it not for the size, might be easily mistaken for those of *A. approximans*, which they greatly resemble."

4.—*ASTUR NOVÆ HOLLANDIÆ*, Gmelin.—(15)

WHITE GOSHAWK.

Figure —Gould: Birds of Australia, fol., vol. i, pl. 15.

Reference —Cat. Birds Brit. Mus., vol. i., p. 118.

Previous Descriptions of Eggs.—Campbell: Victorian Naturalist (1888), also Proc. Austr. Assoc. vol. vi. p. 419 (1895).

Geographical Distribution.—Queensland, New South Wales, Victoria, South Australia, and Tasmania.

Nest.—Somewhat flat, constructed of fine sticks broken from the extremity of dry branches, and lined inside with green eucalyptus leaves.

Eggs.—Clutch, two to four; roundish oval in shape; texture of shell coarse; surface soft and almost lustreless; colour, bluish-white, with a

few large smudges and specks of purplish-brown markings, some of which are duller in colour, appearing as if beneath the surface of the shell. Dimensions in inches of a clutch of Tasmanian eggs: (1) 1.87×1.53 , (2) 1.85×1.53 , (3) 1.85×1.51 . A fine pair taken at the Nicholson River, Gulf of Carpentaria district, is sparingly marked with reddish-brown or umber: (1) has a few blotches, chiefly on the apex; dimensions, 2.05×1.61 ; (2) has smaller markings likewise, principally on the apex, where there are also faint purplish-brown streaks, after the manner of those on the eggs of the White-headed Sea Eagle (*Haliastur girrenera*); dimensions, 2.0×1.53 . (Plate 1.)

Observations.—The White Goshawk is a most beautiful creature in pure white plumage; cere and legs yellow, bill and claws black, while the eyes are fiery red or reddish-brown. In size the bird (male) is 15 or 16 inches long; wing, 10 inches; tail, $7\frac{3}{4}$ inches. The White Goshawk enjoys a somewhat extensive range throughout the eastern part of Australia, including Tasmania, where it shows a decided preference for forested tracts. It devours reptiles, small animals, and birds. Some beautiful pictures may be imagined of this Goshawk in snow-white dress, with its dying quarry held in relentless grip—perhaps a Parrot of many gay colours, or perchance a male Regent Bird in its handsome black and golden garb (for the Hawk picks out conspicuous birds).

The announcement of the finding of the nest and eggs of this lovely hawk was first made at the October meeting, 1887, of the Royal Society of Tasmania, when the secretary (Mr. Alex. Morton) stated that Mr. Arthur E. Brent, an enthusiastic collector, had discovered on the previous day a nest containing two eggs. Subsequently the discoverer was good enough to allow me to describe the eggs, and forwarded the following information:—"Nest composed of very fine, dry sticks, broken freshly from the extreme ends of dry branches, very flat, with a few green peppermint gum-leaves forming the receptacle for the eggs, which were two. Tree, stringybark; and nest about seventy feet from the ground. The bird being very aggressive, I had to use my left hand to keep her off. I could feel the wind on my face from her wings as she flew past, and on more than one occasion her wing feathers touched my hand, she uttering a piercing cry the while. The eggs were taken on the 9th October. Locality: A dark gully on Mount Faulkner."

Subsequently another White Hawk's nest was known to Mr. Brent, from which eggs were taken two successive seasons. The nest was composed of very fine twigs from the dead branches of standing trees, which the birds settle on, break off with their talons, and carry direct to the nest. This Mr. Brent has observed. The lining of small green twigs and leaves is gathered in like manner. Although the birds laid about the end of October, in this instance they appeared to have commenced to repair their nest about the middle of September, for Mr. Brent writes:—"On the 16th I started for the locality, which I reached about eight o'clock. Secreting myself on the broad of my back in the ferns, &c., I waited the result. I had not more than twenty minutes to wait when the cries of little birds around told me of the approach of their enemy, and,

looking in the direction from whence came a sound like a rushing wind, I saw high up the hill-side above me a streak in the air, which proved to be the male bird from its smaller size. It came straight for the nest at a terrific rate, shot past the nest, then took a complete circle and settled right in it, carrying in its claws two small twigs, which the bird immediately dropped, and hopping on to the side of the nest seemed to be placing them with its beak, all the while uttering a half-whistle, half-cackling noise. This I saw repeated several times, likewise by the other bird, which was also white."

Mr. Brent again visited the nest on the 4th November, when he took three eggs with incubation about ten days old. The nest resembled that of *A. approximans*, but is a trifle larger. It may be mentioned that the eggs (three) were taken the previous season, about the middle of November, by some local lads, who required a rare reward for them.

5.—*ASTUR NOVE HOLLANDIÆ* (sub-species) *LEUCOSOMUS*, Sharpe.—(1)

LESSER WHITE GOSHAWK.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 119.

Geographical Distribution.—North Queensland, also New Guinea and adjacent islands.

Nest and Eggs.—Undescribed.*

Observations.—The nest and eggs of the Lesser White Goshawk are up to the present unknown to science. It is the only species of Australian Accipitres of which we possess no information with regard to its nidification. But, doubtless, in that as in other respects the Lesser White Goshawk resembles its southern and close allies, *A. cinereus* and *A. nove-hollandiæ*, by constructing the usual stick-made nest, and laying two or three bluish-white eggs meagrely marked with brown, if marked at all.

6.—*ASTUR APPROXIMANS*, Vigors and Horsfield.—(17)

GOSHAWK.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 17.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 126.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 42 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i. p. 1141 (1886). Campbell: Proc. Austn. Assoc. vol. vi., p. 420 (1895)

Geographical Distribution.—Australia in general and Tasmania; also Norfolk Island and New Caledonia.

* Dr. Sharpe doubts the existence of this sub-species in Australia. Reputed eggs in Mr. G. A. Keartland's collection are roundish ovals, somewhat coarse, without gloss; colour, bluish-white; inside lining, green. Dimensions in inches (1) 1.72 × 1.4, (2) 1.7 × 1.38. I fear the eggs described by Mr. D. Le Souéf (Vict. Nat. xvi., p. 101) (judging by their small size 1.52 × 1.18 inches) cannot be referable to the Lesser White Goshawk.

Nest.—Constructed of sticks and twigs, lined sparingly with leaves, and generally situated in a lofty eucalypt or other tree, not unfrequently overhanging a stream or lagoon. Dimensions over all about 22 inches; egg capacity, $2\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to four, but usually three; stout ovals in shape, but sharper at one end; surface of soft appearance and almost lustreless; colour, bluish-white, in some instances sparingly marked with roundish blotches and spots of dark reddish-brown. In common with all Goshawks' eggs, when empty and held up to the light, there appears a greenish colour on the inner side of the shell. Dimensions in inches of a clutch taken at Coomooboolaroo, Queensland, 6th October, 1885: (1) 1.87×1.47 , (2) 1.85×1.49 .

Observations.—This bold and dashing Goshawk is commonly dispersed over Australia and Tasmania; and, notwithstanding that it is plentiful, the different stages of plumage between young and matured birds cause much confusion as to its identification. That some of the birds breed before full livery is donned I feel convinced.

Bold and dashing I said Goshawks were; of the latter quality the Messrs. Brittlebank had a good illustration one morning, when uninvited a Goshawk, like a meteor, dashed through a window-pane of their dwelling at Myrmiong. Here is the note, written March, 1892:—“This Hawk came through our bedroom window about 6.30 last Wednesday morning. When it struck the glass, it went off as loud as the report of a gun, which we all thought it was—glass flying and falling all over the room, some even going through the blind. The blow must have been very swift, as a round hole was described in the pane. Fancy it must have been after a sparrow which rested on the window-sill.”

I shall endeavour briefly to describe the bird. Adult—Back of head, back, wings, and tail dark slate-colour; on the throat is a reddish-brown band which, encircling the neck, is more obscure there in colour; remainder of under surface rusty-red, finely marked with cross bars of dark-brown. Eyes, cere, and legs all match each other in bright yellow, while the bill and talons are slaty-blue. The total length varies from 15 to 20 inches, including a somewhat lengthened tail. The young bird differs from this considerably, having most of the upper surface deep brown, each feather with a crescent-shaped rufous mark at the extremity. The under surface is generally buffy-white, with a dark-brown stripe down the centre of each feather on the throat, and elsewhere the feathers are crossed by irregular bands of dark-brown, with rufous blotches in the centre.

Strolling along the banks of the Loddon River, Victoria, on one occasion, I observed a nest of the Goshawk in an overhanging tree, likewise in the same tree was a home of the White-fronted Heron (*Notophorx nova-hollandia*), and both species of birds sitting. The next nest of this Goshawk that interested me was at Coomooboolaroo, Queensland, where I witnessed Mr. Harry Barnard ascend a tall eucalypt to the height of

about seventy feet from the ground, and from a nest on a horizontal forked limb abstract a pair of typical eggs, which are now in my collection—with unusually full data. Breeding months include August to December, chiefly the three last months.

There is a singular fact worthy of record that some birds lay a fuller complement of eggs in Tasmania than the same species do on the mainland. The Goshawk may be cited as an instance. On the Continent two or three eggs form a clutch, while the Tasmanian collectors, Messrs. George H. Hinsby and Arthur E. Brent, almost invariably take four on their island. Mr. Brent writes:—"I have taken several nests of this interesting Hawk, and have been present at the taking of others, and in every instance except one the nest contained a whole clutch of four eggs. Only three days ago (the 29th October, 1894) I took a nest containing four eggs from a large stringybark eucalypt in Glenorchy. The nest was about eighty feet from the ground, and was a flat structure of fine sticks about eighteen to twenty inches across, and was lined about eight to ten inches across with green gum leaves, while the inside shallow basin or cavity for the eggs was about five or six inches across."

7.—*ASTUR CRUENTUS*, Gould.—(18)

LESSER GOSHAWK.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 18.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 127.

Previous Descriptions of Eggs.—Campbell: Proc. Roy. Soc. Victoria, vol. iii., new ser., p. 1, pl. 1, fig. 5 (1890), also Proc. Austr. Assoc. vol. vi. p. 422 (1895).

Geographical Distribution.—West and North-west Australia, and Victoria (casual).

Nest.—Constructed of dead sticks, lined inside with finer material, including probably green leaves, and placed on the horizontal fork of a tall tree.

Eggs.—Clutch, two to three; roundish in shape, with almost lustreless surface; colour, bluish-white. One specimen in a clutch of two possesses a few smudges of reddish-brown and a large splash of light purplish-brown. Dimensions: (1) 1.73 × 1.36, (2) 1.7 × 1.35.

Observations.—As Gould observes, this Goshawk is an intermediate size between the Australian Goshawk (*Astur approximans*) and the Collared Sparrow Hawk (*Accipiter cirrhocephalus*). It is more particularly a western bird, but probably ranging to Northern Australia; while individuals casually reach eastern parts.

Principal breeding months are October, November, and December.

8.—ACCIPITER CIRRHOCEPHALUS, Vieillot.—(19)

SPARROW HAWK.

Figure.—Gould: Birds of Australia, fol. i., pl. 19.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 141.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 46 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., pp. 53 and 413 (1882); North: Austr. Mus. Cat. pl. 2, fig. 6 (1889), Campbell: Proc. Austr. Assoc. vol. vi., p. 423 (1895).

Geographical Distribution.—Australia in general, Tasmania, and New Guinea.

Nest.—Sometimes large, at other times small, constructed of sticks and twigs, lined inside with fibrous material or eucalypt leaves, and situated in the forked branches of a tree usually growing near water. Frequently the nest of another bird of prey is used.

Eggs.—Clutch, three to four; roundish in shape; texture of shell comparatively fine, with surface lustreless; colour, white, with a bluish or greenish tinge, devoid of markings, but more frequently stained with dirt from the nest during incubation, while other examples possess a few blotches or spots of dark-brown. Dimensions in inches of a proper clutch: (1) 1.53 × 1.21, (2) 1.51 × 1.23, (3) 1.51 × 1.20. (Plate I.)

Observations.—This is the smallest of Australian Hawks; but for a bold and fearless disposition, rapidity of flight, abrupt turning, and unerring aim at luckless prey, the little Sparrow Hawk far excels many of its larger competitors. However, the incidents of its attacking a White-fronted Heron, decapitating a Bustard, &c., alluded to in my papers before the Australian Association, I regret to say I unfortunately misunderstood my informants. These wonderful feats of daring should have been referable to the dashing Little Falcon, a bird similar in size to the Sparrow Hawk.

Mr. Hermann Lau, formerly of South Queensland, furnishes us with the remarkable fact of the Great Cuckoo or Channel Bill (*Scythrops*) depositing its egg in the nest of a Sparrow Hawk, or a nest, at all events, where the Sparrow Hawk had laid. In September, 1874, near Yandilla, he found a Hawk's nest, which was situated high in the branches of a tree. It contained two eggs nearly incubated, but, to his intense surprise, one was evidently the large purplish-brown egg of the Channel Bill, or, as it is called in the interior, the "Rain Bird."

One of Mr. G. A. Keatland's field notes during the progress of the Calvert Expedition in North-west Australia is as follows: "Along the Fitzroy and Margaret Rivers and their branches these bold little birds were met with. Near our camp, in January, I was surprised to see a small male bird attacking a pair of Rose-breasted Cockatoos. The Cockatoos had selected the hollow branch of a tree for their nest, and whilst they were trimming the entrance to their future domicile, the Hawk made frequent swoops at them, knocking out bunches of feathers, and causing the Cockatoos, which were more than twice his weight, to cry out with pain. This battle was continued for some time, and was eventually terminated

with a cartridge, as I hoped to have the chance of robbing the Cockatoo's nest myself."

The breeding season generally of the Collared Sparrow Hawk is included in the months from August to November, and possibly December.

SUB-FAMILY—BUTEONINÆ: BUZZARDS.

9.—UROSPIZIAS RADIATUS, Latham.—(16)

RED GOSHAWK.

Figure.—Gould. Birds of Australia, fol., vol. i, pl. 16

Reference.—Cat. Birds Brit. Mus., vol. i., p. 159.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N S. Wales, 2nd ser., vol. i. p. 1141 (1886); Campbell: Victorian Naturalist (1886); North: Austn. Mus. Cat., app. pl. 2, fig 2 (1890); Campbell: Proc. Austn. Assoc. vol. vi. p. 422 (1895).

Geographical Distribution.—South Queensland and New South Wales, and probably the interior of both Northern Territory and South Australia.

Nest.—Somewhat large, constructed of sticks lined inside with twigs and eucalypt leaves, and placed in a lofty tree, usually a eucalypt.

Eggs.—Clutch, two to three; roundish in shape; surface somewhat rough and without lustre; colour, uniform dull or bluish-white. One example in a pair has a few blotches, spots, and other irregular markings of dark-brown. Dimensions in inches: (1) 2.19 × 1.79, (2) 2.14 × 1.81. Two examples of a second clutch of three, which were all without markings, give—(1) 2.25 × 1.79, (2) 2.17 × 1.82.

Observations.—This rare and powerful Goshawk is an inhabitant chiefly of the interior. The eggs were first brought to scientific light by the late Mr. George Barnard, of Coomooboolaroo, Central Queensland, whose good name was, and is now through his sons, a household word amongst natural history collectors in Australia. The first and original nest was found in September, 1884, by Mr. Barnard's sons in the top of a lofty Moreton Bay ash (*Eucalyptus tessellaris*) on their cattle station. The nest contained a pair of eggs. Mr. Barnard did not allow the interesting discovery to grow cold, but at once forwarded a specimen to the Australian Museum for Dr. Ramsay to describe, while the description furnished by me in the "Victorian Naturalist" was taken from the other specimen in the collection at Coomooboolaroo.

A second nest was not found till 29th October, 1889, when a fine egg was forwarded by Mr. Barnard in an unostentatious manner (as was his

quiet, unobstrusive disposition), to adorn my collection. This time the nest was built in a lemon-scented gum (*Eucalyptus citriodora*), and was constructed in a flat fork, projecting straight out from the tree, at a height of about sixty feet from the ground. There were two eggs in the nest; but in communicating with Mr. North, to whom he also presented a specimen, Mr. Barnard wrote:—"A rather singular occurrence took place about the Radiated Goshawk's nest. When my sons found it there were two eggs in it; and one of them shot the male. About a month after, being up that way again, one of them climbed the tree and found another egg in the nest, evidently laid after the first eggs were taken and the male shot."

The description, &c., of the eggs above given are from those two nests. A third nest was, however, found on the 3rd October, 1893, by Mr. Harry Barnard, but it contained two young ones a few days old. In this instance the nest was again situated in a large lemon-scented gum, and at a distance of seventy-three feet from the ground.

The breeding months of the Red or Radiated Goshawk may therefore be said to be August, September and October.

SUB-FAMILY—AQUILINÆ: EAGLES.

10.—UROAETUS AUDAX, Latham. —(1)

WEDGE-TAILED EAGLE (EAGLE HAWK).

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 1.

Reference.—Cat Birds Brit. Mus., vol. i., p. 231.

Previous Descriptions of Eggs.—Ramsay: Ibis, vol. v., p. 446 (1893).

Gould, Birds of Australia, Handbook, vol. i., p. 10 (1865).

North: Austr. Mus. Cat., pl. i., fig. 1 (1889). Campbell: Proc Austr. Assoc., vol. vi., p. 424 (1895).

Geographical Distribution.—Whole of Australia and Tasmania.

Nest.—Composed of dead sticks, and lined inside with such material as stringybark or grass and green branchlets. Usually the structure is exceedingly bulky, but somewhat flat on the top; a fair-sized nest measuring about five or six feet across; inside, or egg cavity, about fourteen inches across by three or four inches deep. Situation, always a commanding one—a tall forest tree, or the forked limb of a tree at the bend of a river, or on a good mountain outlook. On the plains of the interior, where timber is absent, the nest is sometimes constructed of grass and placed on a bush.

Eggs.—Clutch, two usually, sometimes one, rarely three; round in shape or round ovals; texture of shell coarse, surface dull and lustreless;

colour, warmish-white, blotched and spotted with rusty-red or chestnut, intermingled with dull cloudy purplish markings, which underlie the surface of the shell. In another pair the dull purplish markings predominate, one example having the whole of the smaller end covered with a large patch of dull or light purple. In a third clutch the dull markings predominate in one egg, while the other is so richly marbled or mottled with the rusty-red (in large patches in places) and purplish markings as to obliterate nearly the entire white surface. In some instances specimens have been known to be devoid of any markings, or one white egg in a pair.

Dimensions in inches of proper clutches, namely:—

Two taken in Victoria...	{ A (1) 2.92 × 2.24; (2) 2.84 × 2.22.
		{ B (1) 2.91 × 2.42; (2) 2.88 × 2.36.
One taken in Tasmania	(1) 3.00 × 2.4; (2) 2.88 × 2.26.
One taken in Western Australia	(1) 2.71 × 2.26; (2) 2.62 × 2.24.

(Plate I.)

Observations.—The readers of Anthony Trollope may regard the statement as Australian "blow" when I say that our Eagle, or as Australians call it, the Eagle Hawk, is larger than the famous Golden Eagle of Europe and elsewhere. Nevertheless, that is the fact, and any person who doubts may see both birds side by side in that well-ordered and instructive institution, the Zoological Garden, at Royal Park, Melbourne. It is somewhat remarkable that, in his *Handbook*, Gould has not recorded detailed dimensions for so large and important a bird as the Wedge-tailed Eagle. Diggles gives figures as follows: Total length, 38 inches; wing, 24 inches; tail, 17½ inches; bill, 2¾ inches; and tarsi or legs, 5 inches. The measurements of the Golden Eagle are:—Length, 32 inches; wing, 21½ inches; tail, 13 inches. He does not give the expanse between tips of the wings, but I should say the measurement in an average specimen would be about six or seven feet. We are all familiar with the garb of the Wedge-tailed Eagle, which is dark-brown, almost black in some specimens. The difference between the brown and black plumage may be accounted for by age. The wedge-shaped tail, which first suggested the vernacular name of the bird, is generally black. The cere—*i.e.*, the naked space between the feathers of the forehead and the bill proper—is yellowish, the bill yellowish-horn colour, passing into black at the tip, and feet also yellowish. Taken altogether, it is a noble and imposing bird, with searching hazel eyes set in a flat-crowned head.

The Wedge-tailed Eagle enjoys a wide range throughout the length and breadth of Australia and Tasmania. It is, however, becoming rare in parts, and in the near future may be as scarce as the Golden Eagle in Europe, consequent upon the war waged against the bird by squatters and others for sundry pastoral depredations, which the splendid bird is tempted by nature to commit. If we only reflect for a moment, we shall learn that the good Eagles perform considerably overbalances the harm they do.

Most of my experiences amongst Eagles' nests have been with the Messrs. Brittlebank in that romantic locality known as the Werribee Gorge, and the adjacent ironbark forest ranges beyond Bacchus Marsh, Victoria. Since the gold era, these wild localities have remained practically undisturbed for years. In some of the more secluded gullies we



NEST OF THE WEDGE-TAILED EAGLE

From a Photo by the Author.

have seen trees supporting two or three nests, while at one favourite bend no less than six bulky structures were in sight, showing how long the birds had retained the same spot. Of course only one or two would be the new nests; the others were abandoned aeries. Sometimes we proved that a particular nest was added to and used again season after season, and contained a plentiful amount of fur, evidently from rabbits and other animals consumed by the birds and young. The favourite situation for a nest or aerie is about thirty feet from the ground in a tree on the face of a steep hill, with the gully two hundred feet below and a commanding outlook on either side. Eagles' eggs in the locality mentioned have been taken as early as the end of August and as late as 26th October, the birds appearing to commence to mate in March and April. However, in other localities, notably in Queensland, eggs have been taken as early as the 10th June.

In some instances the eggs were covered with branchlets or nest *debris*, showing the birds' caution in not leaving their eggs exposed, when the owners were absent. The nests Gould had opportunities of observing were placed on the most inaccessible trees. Although, during the months of August and September, he repeatedly shot birds from their aeries in which there were eggs, he was unable to obtain them, no one but the aborigines being capable of ascending such trees. But, during the year 1864, Gould received his first fine egg from Mr. George French Angas, of South Australia.

Dr. Ramsay, writing to the *This*, 1863, says:—"The first eggs I obtained were taken in August, 1860, and were given me by Mr. James Ramsay, at Cardington, a station on the Bell River, near Molong. They were taken from a nest by a black-boy who had 'stepped' the tree. The nest was placed upon a fork near the end of one of the main branches of a large eucalyptus. It was fully seventy feet from the ground, and no easy task to get to it. The structure was about three-and-a-half feet high by four or five feet broad, and about eighteen inches deep, lined with tufts of grass and with down plucked from the breasts of the birds, upon which the eggs were placed."

The following are valuable notes received from correspondents with reference to the nesting of the Wedge-tailed Eagle.

Mr. Hermann Lau (South Queensland) states:—"The eggs are two in number. A cartload of various dry sticks, from the thickness of one's arm and downwards, lined inside with animal hair and grass, constitutes the nest. The Eagle builds early in June, carrying the material in its talons. Situation, sometimes fifty feet from the ground in a thick fork of a large tree. Once I sent my blackfellow up to secure eggs, when the Eagle swooped down on him, took his felt hat from his head, and with it soared nearly out of sight into the sky. After a while the hat fell to the ground none the worse. The eggs were secured."

Mr. James G. McDougall (South Australia) writes:—"The Eagle breeds in the malleo and she-oak (*Casuarina*) scrub of the uninhabited south-west portion, where I have seen their nests and eggs. The nest is made of thick sticks piled together in a slovenly fashion, till the entire structure would form a good load for a cart."

From Mr. Tom Carter (North-west Australia) we learn:—"The Wedge-tailed Eagles' nests I have seen on the Gascoyne coast were on bushes about five feet high, there being no trees near the coast. Two eggs were taken 2nd June." The young in down are of snowy whiteness. A nest examined by a local oologist in Tasmania contained, besides a pair of pure white eaglets, two rabbits, one opossum, and a lamb, all much decomposed. The following newspaper clipping is a fitting couplet to the foregoing:—"Mr. Percy Thomas, boundary rider for Mr. J. K. Phillips, of Rifle Downs, Victoria, felled a tree in which was an eagle's nest. When examined, the nest was found to contain two eaglets; also two kangaroo rats, two opossums, and seven rabbits, all slightly pecked."

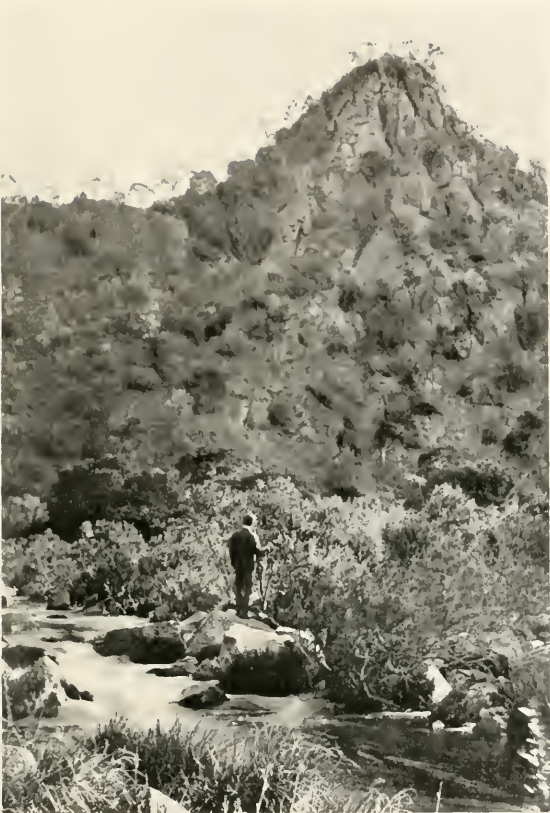
An observing friend on the Paroo, New South Wales, noticed an Eagle's nest that had been used for nine successive seasons, but whether it was occupied by the same pair of birds could not be ascertained.

Eagles evidently take their time at nest building. Mr. Charles Barnard (Queensland) observed a new, half-built nest during the first of May. It was not completed and the eggs laid therein till about the 7th July. In this nest, under the usual lining of green leaves (scented eucalypt), was a sub-layer, about two inches deep, of finely-chopped iron-bark (eucalypt) leaves, apparently bitten by the birds into pieces from half-an-inch to one inch in length. Has any other collector noticed these "minced" leaves in Eagles' nests?

Whether it be a fact or not, a newspaper is responsible for the following remarkable note:—"It is not generally known that the Eagle Hawk constructs a table on which to eat his food. I had often mistaken these tables for old nests, till one day I found one in a gidgea tree on the Warri Warri. The bird was perched on top, feeding. Under the tree was a mass of bones and feathers. I climbed up, and was surprised to find that the supposed nest was a structure of stout, thick sticks, closely and skilfully interlaced, with a top almost square and as flat as a board. On it was a small and half-devoured wallaby. I have climbed up to and examined many such structures since, and, as I have seen several nests of the Eagle Hawk, some of which contained young birds, I may safely assume that these tables are specially constructed for eating on. The Eagle Hawk generally builds its nest in the top of the highest tree. I have always found the 'tables' in very low trees—such as the gidgea.—E.S.S."

To conclude our nesting observations on the Wedge-tailed Eagle I may mention that collectors not unfrequently find underneath and adjoining these large nests a nest of the Yellow-rumped Tit (*Geobasileus chryssorhoa*), or of the Spotted-sided Finch (*Staganopleura guttata*), or perchance, if in the interior, that of the White-face (*Xerophila*). Extremes meet, and the great stick-built aerie of the Eagle seems to be an especial refuge in certain cases for the homes of the before-mentioned tiny birds. It would be merely speculation on my part to state why the little creatures choose such places when more favourable situations are apparently available.

Illustrations are given of an Eagle's nest and an Eagle's look-out, both photographed in the Werribee Gorge, near Bacchus Marsh, Victoria.



AN EAGLE'S LOOK-OUT—WERRIBEE GORGE.

From a Photo by the Author

11.—*NISAETUS MORPHINOIDES*, Gould.—(2)

LITTLE EAGLE.

Figure.—Gould. Birds of Australia, fol., vol. 1., pl. 2

Reference.—Cat. Birds Brit. Mus., vol. 1., p. 254

Previous Descriptions of Eggs.—Gould. Birds of Australia (1848), also Handbook, vol. 1., p. 12 (1865). Ramsay. Proc. Linn. Soc. N.S. Wales, vol. vii., p. 413 (1882). North. Austr. Mus. Cat. pl. 2, fig. 1 (1889). Campbell. Proc. Austr. Assoc., vol. vi., p. 427 (1895).

Geographical Distribution.—Australia in general, and New Guinea.

Nest.—When constructed by the birds themselves it is somewhat large, and is composed of sticks and twigs, lined inside with green leaves, and situated in a large tree. Dimensions over all 30 inches by 19 inches in depth; egg cavity, 8 inches across by 3 inches deep. Sometimes the Eagle takes possession of a deserted Raven's (or other large) nest.

Eggs.—Clutch, one to two, more frequently one; round oval in shape; shell, somewhat coarse or porous; surface lustreless; colour, dull bluish-white, sparingly marked with blotches and dashes of light reddish-brown. In some examples the markings are absent or nearly so. Eggs from the same nest frequently vary, one being marked, the other not. Dimensions in inches of a proper pair: (1) 2.33×1.76 , (2) 2.29×1.82 ; of odd examples: (1) 2.21×1.77 , (2) 2.16×1.77 . (Plate 2.)

Observations.—The Little Eagle is more an interior bird, and not so often seen as the Wedge-tailed Eagle. Its total length is between 21 inches and 22 inches, with an expanse between the wing tips of about 50 inches. In general terms, the bird may be described thus: Upper surface brown, under surface rich rufous, rendered beautiful by a dark stripe down each feather; cere, bill, and feet somewhat lead-coloured; and eyes reddish-hazel.

Gould discovered this fine species in 1839, at Yarrundi, on the Hunter River, New South Wales. He was led to the discovery by finding a nest of the bird, containing a single egg, which was far incubated. He regretted that, although he visited the place after killing the bird, all attempts to procure its mate were (fortunately for the mate) entirely unsuccessful. The nest, Gould states, was of a large size, and was placed close to the bole, about one-fourth of the height from the top of one of the highest gum trees. The second specimen of the egg of this species received by Gould was presented to him by the late Mr. S. White, of Adelaide, who obtained it in the interior of South Australia. The eggs of the same species, subsequently described by Dr. Ramsay, were from Mr. Bennett's collection; while the examples of these rare eggs in my own collection were taken by the Messrs. Barnard, of Coomooboolaroo, Queensland, where it has been observed that the principal breeding months for the Little Eagle are from August to October.

12.—*BUTASTUR TEESA*, Frankl.

WHITE-EYED BUZZARD EAGLE.

Reference.—Cat. Birds Brit. Mus., vol. i. p. 295.

Previous Description of Eggs.—Hume: Nests and Eggs Indian Birds, vol. iii. p. 158 (1890).

Geographical Distribution.—New South Wales (accidental), also plains of India, extending eastwards to Assam, and westwards to Scinde.

Nest.—A loose structure of twigs and sticks, very much like a Crow's, and without lining (Hume).

Eggs.—Clutch, three usually, four rarely; shape varies from ovate-pyriform to blunt ovate-pyriform; colour, pure greyish or plumbeous white. Dimensions in inches vary from 1·8 to 1·93 × 1·5 (Hume).

Observations.—The occurrence of this Asiatic Hawk in Australia is a matter of interest. Respecting it Mr. A. J. North, in the "Records of the Australian Museum," vol. iii., p. 87 (1898), writes:—"Some time ago Mr. Richard Grant, of Lithgow, presented a skin of *Butastur teesa* to the Trustees, accompanied by the following note:—"With regard to this Hawk, I shot it in a ring-barked tree near the Bowenfels Road, Lithgow. I do not know the exact date, but as near as I can remember it was in November, 1889. I skinned it, also some Brown Hawks that I shot the same day, and partly filled the skins out and put them away. I took no further notice of them until my brother returned home and drew my attention to this bird's plumage." Lithgow is situated in a valley of the Blue Mountains, 3,007 feet above the level of the sea, and ninety-six miles west of Sydney. *B. teesa*, the White-eyed Buzzard Eagle, is very abundant in some parts of India, which is the habitat of this species, but I can find no record of its having been obtained on any of the Islands lying between India and Australia. *B. liventer*, which occurs in Java and Timor, or *B. indicus*, inhabiting Borneo, Sumatra, and the Philippines, I should not have been so much surprised at obtaining on the Australian Continent."

13.—*HALIAETUS LEUCOGASTER*, Gmelin.—(3)

WHITE-BELLIED SEA EAGLE.

Figure.—Gould: Birds of Australia, fol. vol. i, pl. 3.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 307.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 15 (1865); Hume: Nests and Eggs Indian Birds (1875), also vol. iii., p. 161 (1890); Legge: Birds of Ceylon, p. 71 (1880), also Proc. Roy. Soc. Tasmania, p. 129 (1888); North: Austr. Mus. Cat., p. 7, pl. 1, fig. 2 (1889); Campbell: Proc. Austr. Assoc., vol. vi., p. 427 (1895).

Geographical Distribution.—Australia and Tasmania; also New Guinea, Malay Archipelago, Western Polynesia, India, and Ceylon.

Nest.—A very large flat structure of sticks and other *debris*, and situated on an isolated rock or cliff, but sometimes placed in a large tree—*Eucalyptus*, *Banksia*, &c.,—adjacent to the coast, or inland. Dimensions about 6 feet across.

Eggs.—Clutch, two usually, three rarely; oval in shape; texture of shell coarse, and more granulated than those belonging to the Wedge-tailed Eagle (*Uroaetus aular*); surface has slight trace of gloss; colour, usually a dull white, but sometimes stained with brownish markings, probably received in the nest during incubation. When held up to the light, the interior of the shell, if empty, appears a dark or blackish-green. Dimensions in inches of two clutches from islands in Bass Strait:

A (1) 2.84 × 2.05, (2) 2.79 × 2.1 (taken near Swan Island, 1884);

B (1) 2.87 × 2.18, (2) 2.79 × 2.16 (taken Kent Group, 16-9-92).

Observations.—Next in size to the Wedge-tailed Eagle comes the Sea Eagle, a large and handsome creature in silvery-grey and white plumage. It is the coat only that is grey, while the head, neck, and all the under parts are pure white, cere and bill greenish lead-colour, legs yellowish-white, and brown eyes. Youthful birds have a mottled appearance and do not don the pure white plumage until the third season. Total length, 28 to 32 inches; wing, 22 inches; tail, 10 inches. The White-bellied Sea Eagle is really a noble creature. Although found in secluded and retired parts round about the coast of Australia and Tasmania, this splendid bird is fast disappearing from its once favoured haunts. This is much to be regretted, if only for its interesting and ornamental appearance. Why, then, do persons so ruthlessly destroy it? Beyond taking a fat duck now and again from the property of dwellers on the coast, or “sneaking” a bird that falls wounded by a sportsman’s gun, the Sea Eagle is perfectly harmless.

With regard to the nidification of the White-bellied Sea Eagle, Gould states:—“I could not fail to remark how readily the birds accommodate themselves to the different circumstances in which they are placed; for, while on the mountains they invariably construct their large, flat nest on a fork of the most lofty trees, on the islands, where not a tree is to be found, it is placed on the surface of a large stone, the material of which it is formed being twigs and branches of barilla, a low shrub which is there plentiful. While traversing the woods in Recherche Bay (Tasmania) I observed a nest of this species near the top of a noble stringybark-tree (*Eucalyptus*), the bole of which measured forty-one feet round, and was certainly upwards of two hundred feet high. This had probably been the site of a nest for many years.”

In the days of Cook and Flinders an opinion was expressed that the enormous nests observed by these illustrious navigators had been constructed by some species of *Dinornis*. Gould had no doubt that they were the nests of the Sea Eagle. Some may have been the Osprey’s, which usually rears its huge stick-built aerie on some headland or islet.

According to Flinders’ account, two nests of extraordinary magnitude were found near Point Possession. They were built upon the ground.

from which they rose about two feet, and were of vast circumference and great interior capacity, the branches of trees and other matter comprising each nest being enough to fill a small cart. Captain Cook also found one of these enormous nests on an island on the east coast, which he called Eagle Island.

For many years there existed an aerie of the Sea Eagle on Cape Wollamai, Phillip Island, Victoria. It was visited by a party of field naturalists in November, 1886, when it was found to contain a pair of fully-fledged Eaglets. The following year the Field Naturalists' expedition to King Island, Bass Strait, observed several nests of the Sea Eagle on dead blue gum-trees (*Eucalyptus globulus*) on that island.

Near Coomoooolaroo, Queensland, the White-bellied Sea Eagle lays in June; while Mr. K. Broadbent found on the Cardwell beach, also in June, a nest containing young, built in a tea-tree (*Melaleuca*). From the other side of the Continent Mr. Tom Carter writes me:—"White-bellied Sea Eagles plentiful. Had my eye on two nests which the birds were repairing in May, but they either left the nests in consequence of sheep feeding around, or the natives got the eggs." Another season, on the 5th October, Mr. Carter observed two nests on the Lower Murchison containing incubated eggs. On one occasion, Mr. Carter saw a Sea Eagle carrying something long and trailing, which the bird dropped. It proved to be a sea-snake, over five feet long, as thick as one's wrist, and was still alive.

I am indebted to Mr. Robert Walpole, Woodside, Gippsland, for the fine pair of Sea Eagles' eggs that now grace my cabinet. He took them on the 19th August, 1895, on St. Margaret's Island, Shallow Inlet. The nest was built at the height of about thirty feet from the ground in a white gum-tree. Mr. Walpole enclosed with the eggs portions of the lining of the great nest, which were branchlets of banksias and eucalypts, evidently plucked when green by the bird.

Mr. S. W. Jackson and his brother Frank robbed a Sea Eagle's nest in the Lower Clarence River district, 14th August, 1898, which contained the unusual complement of three eggs, two almost invariably being the clutch. The nest was at the height of about one hundred feet in a tall eucalypt, and was reached by the aid of an ingeniously made "rope" ladder. (See illustration.) The nest measured 6 feet 7 inches across by a height of 4 feet 10 inches.

Although essentially a coastal bird, the Sea Eagle has been known to breed far inland in localities favourable to the bird's habit. Mr. Harry Barnard has taken the eggs one hundred and fifty miles from the sea-board. There are other instances of nests seen inland, notably on the Lower Edward River, and at Lake Moira, Riverina, New South Wales, and in the Mallee, Victoria. McKinlay, the explorer, in 1862, noted the birds inland on the Upper Burdekin, North Queensland.

On Rat Island, Abrolhos Group, West Australia, I observed what I believe was a recently deserted aerie of the Sea Eagle. Scattered round about were spiny tails of lizards (*Egernia*) dried wings of Sooty Terns, and Allied Petrels, thus showing what the old birds were in the habit of feeding their young upon.



NEST OF THE WHITE-BELLIED SEA EAGLE.

From a Photo by S. W. Jackson.

The breeding months of the Sea Eagle may be said to extend from May to November, the principal laying times being June and July in New South Wales, Queensland, and other northern parts, and August and September on the southern coast, including Tasmania.

14.—HALIASTUR INDUS (sub-species) GIRRENERA, Vieillot.—(4)

WHITE-HEADED SEA EAGLE.

Figure.—Gould: Birds of Australia, fol. vol. i., pl. 4.

Reference.—Cat. Birds Brit. Mus., vol. i. p. 315.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 18 (1865); Ramsay: Ibis, vol. i., p. 83 (1865); Ramsay: P.Z.S., p. 578 (1875); Campbell: Proc. Austr. Assoc. vol. vi. p. 429 (1895).

Geographical Distribution.—North-west Australia, Northern Territory, Queensland, and New South Wales; also New Guinea, Amboina, Batchian, Morotay Islands, Celebes, and Louisiade Archipelago.

Nest.—About 24 inches in diameter, constructed of sticks and twigs, lined with finer material or coarse grass, &c., and usually situated in a large tree in a retired locality near the coast.

Eggs.—Clutch, two; roundish or sometimes inclined to oval in shape; surface somewhat coarse and lustreless; colour, dirty or bluish-white, marked somewhat sparingly with hair-like streaks and minute dots of reddish-brown, the markings being more numerous sometimes at the larger end, other times at the smaller. Dimensions in inches of a clutch: (1) 2.16 × 1.58, (2) 2.03 × 1.52. A specimen in Mr. G. A. Keartland's collection taken near Rockhampton has many light-chestnut markings about the smaller end, and measures 2.17 × 1.68 inches. Occasionally eggs are destitute of markings. (Plate 2.)

Observations.—This handsome Fishing Eagle in snow-white and rich chestnut plumage is tolerably common along the coastal regions of tropical Australia, and as a sub-species of *H. indus* was happily designated *girrenera* by Vieillot, *girrenera* being an Australian aboriginal name for the bird.

"This species," says Gilbert, in his notes to Gould, from the Port Darwin district, "breeds from the beginning of July to the end of August. I succeeded in finding two nests, each of which contained two eggs; but I am told that three are sometimes found. The nest is formed of sticks, with fine twigs or coarse grass as a lining; it is about two feet in diameter, and built in a strong fork of the dead part of a tree. Both of those I found were about thirty feet from the ground, and about two hundred yards from the beach."

Writing to the *Ibis* and giving interesting facts of the nidification of this species from Mr. Rainbird, Dr. Ramsay says:—"The nest of

the Red-backed Fish Eagle is by no means so bulky a structure as that of its allies, nor is it so large as one would expect from a member of the family to which it belongs. In almost every instance the examples found by Mr. Rainbird were placed near the tops of the larger trees in belts of mangroves skirting the edges of salt-water swamps and marshes in the neighbourhood of Port Denison, Queensland. They were composed of twigs and dead branches of mangroves lined with finer material. One, from which that gentleman shot the bird and brought me the egg upon which she was sitting, was lined with tufts of lichen, and in this instance the egg was placed on various fish-bones, shells, and claws of crabs, &c. The edges and sides were beautifully ornamented with long streamers of bleached sea weed, which gave the nest a novel and pleasing appearance."

A fight to the finish. One day, near Point Cloates, West Australia, Mr. Tom Carter picked up a White-headed Sea Eagle and a Brown Hawk, side by side, dead.

15.—HALIASTUR SPHENURUS, Vieillot.—(5)

WHISTLING EAGLE.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 5.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 316.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 21 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1141 (1886); North: Austr. Mus. Cat., p. 9, pl. 4, figs. 1, 2 (1889); Campbell: Proc. Austr. Assoc., vol. vi., p. 430 (1895).

Geographical Distribution.—Australia; also New Guinea, New Caledonia, and Lord Howe Island.

Nest.—Constructed of sticks, fibrous roots, &c., moderately lined with eucalypt leaves: is more frequently built on the topmost forked branches of a lofty tree, but sometimes is placed amongst herbage upon the ground after the manner of the Harrier or Swamp Hawk (*Circus gouldi*). Dimensions over all about 28 inches; egg cavity, 3½ inches deep.

Eggs.—Clutch, two, rarely three; round oval in shape; surface somewhat coarse and lustreless; colour, bluish-white, fairly marked all over with blotches, spots, and other irregular-shaped markings of dark reddish-brown. In some instances the markings are more dappled or cloud-like in appearance, and of a lighter shade of brown intermingled with others of purplish-red. Differences in character of colouration may occur in the same nest. Dimensions in inches of a clutch taken at Coomooboolaroo, Queensland, 16th October, 1885: (1) 2.08 × 1.67, (2) 2.07 × 1.63.

Observations.—This splendid Hawk is a common species in nearly every part of Australia; and, as its more handsome fishing cousin, *H. girrenera*, loves the coastal region, so the Whistling Eagle prefers the more inland dominions. Briefly stated, the description of the Whistling Eagle is—back and wings brown, each feather beautifully pencilled on the



WHISTLING EAGLE'S NEST.

From a Photo by S. W. Jackson.

margin with greyish-white; head, neck, and under surface, light sandy colour, each feather also margined, but with a darker colour; cere, bill, and legs, brownish or bluish-white, and eyes hazel. Total length, 22 to 25 inches; wing, $16\frac{1}{2}$ inches; tail, $10\frac{1}{2}$ inches. I know no bird of prey so elegant in contour as the Whistling Eagle; and its lengthened flat-crowned head is typical of Eagles generally.

Gould, who first described the eggs, once found a nest of this species in the side of which had been constructed that of the beautiful Spotted-sided Finch (*Steganopleura guttata*). Both birds were sitting on their respective eggs close to each other; "and both," adds Gould, "would doubtless have reared their progenies had I not robbed the nests of their contents to enrich my collection."

I was present at the taking of the eggs of the Whistling Eagle in my collection; Mr. Harry Barnard, of Coomooboolaroo, being the climbing performer. The tree was by the lagoon near the homestead, and the nest by actual tape measurement was eighty-five feet from the ground. For about half the distance, steps had to be chopped in the smooth barrel with a tomahawk, in order to reach the first forked limb. While Mr. Harry was climbing, the bird scuttled off her nest, and flew directly away. Eggs were previously taken from the same nest, and again subsequent to my visit, which was 16th October, 1885; therefore it is proved that the Whistling Eagle, like many of the other Hawks, reoccupies its old home. That the Whistling Eagle is sometimes an autumn breeder (according to the season) has also been proved, for the Messrs. Barnard, during the beginning of April, 1883, took a pair of that bird's eggs from a nest; again in March, 1896.

Mr. George H. Morton, an astute field observer, took a pair of Whistling Eagle's eggs from a nest in long grass on his farm near the river Murray.

Mr. S. W. Jackson mentions the following curious note:—"I found a nest one season of a Black-shouldered Kite, and after the Kite had finished building it, the Whistling Eagles hunted it and took possession of the nest and laid in it. I took a clutch of Whistler's from the nest, and nearly the whole of the Eagle, with her tail projecting far over the edge of the nest, could be seen as she sat on the small Kite's nest. It afterwards transpired that the Kite had occupied the Eagle's nest. Fair exchange no robbery."

The following are the dates on which Mr. Jackson has taken, in the neighbourhood of South Grafton, eggs of the Whistling Eagle, and are worth recording to show that this bird breeds at any time of the season:

January 1st, 1893.	February 4th, 1894
March 19th, 1893.	April 10th, 1897.
May 24th, 1898.	June 20th, 1896.
July 10th, 1898.	August 21st, 1898
September 25th, 1898.	October 2nd, 1898.
November 9th, 1896.	December 16th, 1896.

Mr. Jackson, with the aid of his brother Frank, an expert in climbing, and other friends, not forgetting the rope ladder, tomahawk, &c., has, in all, taken about thirty clutches of Whistling Eagles' eggs within five seasons, mostly built in giant trees (see illustration). The full clutch in every case was two eggs, except in one instance, when it was three.

16.—MILVUS AFFINIS, Gould.—(21)

KITE.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 21.

Reference.—Cat. Birds Brit. Mus., vol. i. p. 323.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 413 (1882); North: Austn. Mus. Cat. app. pl. 4, figs. 5, 6 (1889); Hume: Nests and Eggs Indian Birds, vol. iii., p. 176 (1890); Campbell: Proc. Austn. Assoc. vol. vi., p. 431 (1895).

Geographical Distribution.—Australia; also New Guinea and Malayan Archipelago, ranging as far north as India and China.

Nest.—A somewhat rough structure composed of sticks, lined inside with pieces of sheepskin with wool attached or other substitutes, and situated in a tree or on a bush. Sometimes a deserted nest of another bird of prey is used.

Eggs.—Clutch, three to four; round oval in shape; surface somewhat coarse but lustreless, or almost so; colour, dull white, sparingly marked with spots and blotches of reddish-brown; inside lining of the shell greenish. Dimensions in inches of a clutch: (1) 2.09 × 1.58, (2) 2.07 × 1.57, (3) 1.98 × 1.54, (4) 1.94 × 1.57. (Plate 2.)

Observations.—I considered the eggs Dr. Ramsay first described as altogether too small for so large a bird; while the eggs I described, I have reason to believe now, were not laid by an Allied Kite at all.

The set above described are from the Adelaide Museum, and was collected by Mr. A. Zietz, the Assistant Director, November, 1894, during the expedition for fossil bones to Callabonna Creek, towards Central Australia. Mr. Zietz kindly forwarded the following note with the specimens:—"Very often both species of Kites—*M. affinis* and *L. isura*—built their nests in the same tree, about thirty to forty feet from the ground. The nests were built in the strong branches of a species of eucalyptus called 'box-trees,' which grew abundantly in the beds of the creeks. The eggs of both species vary to a great extent in regard to size, shape and markings, but the eggs of the *L. isura* I found always the largest. In one nest of *M. affinis* were six eggs and one young bird: this nest we had robbed about six weeks previously."

The late Mr. K. H. Bennett, of Yandembah, New South Wales, communicated exceedingly interesting notes relating to the nidification of the Allied Kite, which appear in the appendix of the Australian Museum Catalogue. From one place I quote:—"The nest is a rough structure very similar to that of *Circus assimilis* (Jard. and Selby), composed outwardly of sticks, and, in the four I have examined, lined with small pieces of sheepskins with the wool on, picked from carcasses of dead sheep scattered over the plains. The nests are placed, as a rule, on the tops of pine-trees (*Callitris*) where the topmost branches divide, forming a three or more

pronged fork or division, which securely holds the rough structure in position. In two instances this year (1889) the disused nests of *Hieracidea orientalis* were taken possession of (from one of which in October last I took the *Hieracidea's* eggs), the only additions being the sheepskin lining. The number of eggs for a sitting never, so far as my experience goes, exceeds two."

The earliest nest containing eggs found by Mr. Bennett was on the 8th October, the latest on the 20th December; while we learn from Mr. Price Fletcher that from Christmastide to the end of February is the chief nesting time for this Kite in the far interior of Queensland.

Apropos of Mr. Fletcher's story that he has known a Kite to swoop down and carry off from a dish, chops that were being brought from the kitchen to the house, Mr. G. A. Keartland cites another instance of the fearlessness of this Kite, where a bird swooped down to seize a bone that a little girl was enjoying while sitting on the doorstep of a friend (Mrs. Clarke, Maryvale, Queensland). In its effort to secure the spoil the bird of prey left marks on the child's face which she will carry all her life.

Again, writing of these Hawks in the North-west, Mr. Keartland says:—"These tropical scavengers were not seen until the Fitzroy River was approached early in November, 1896, but on our arrival at the telegraph station at the Crossing they were very numerous. All along the road from Derby to the Margaret River, they may be seen in hundreds. During the heat of the day, they seek shelter from the sun amongst the branches of the various trees, but both morning and evening they are either on the wing soaring overhead, or seeking food on the ground. Nothing in the shape of carrion seems to come amiss to them. They are very tame, and are useful in clearing away the offal when cattle are slaughtered. They seldom attack poultry, and, consequently, are not molested. Grasshoppers form the chief portion of their food. They build their loose stick nests in the Baobab-trees during March and April."

17.—LOPHOICTINIA ISURA, Gould.—(22)

SQUARE-TAILED KITE.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 22

Reference.—Cat. Birds Brit. Mus., vol. i., 326.

Previous Descriptions of Eggs—Gould: Birds of Australia (1848), also Handboek, vol. i., p. 51 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii. p. 413 (1882); North: Aus. Mus. Cat., p. 11, pl. 4, figs. 3, 4 (1889); Campbell: Proc. Austr. Assoc. vol. vi., p. 432 (1895).

Geographical Distribution.—Australia in general.

Nest.—Constructed of sticks and twigs, lined more or less with eucalypt leaves and fibrous bark, and placed usually in the higher forked branches of a lofty tree. Dimensions over all, 40 inches by 30 inches in depth; egg cavity, 14 inches across by 3 inches deep.

Eggs.—Clutch, two to three; roundish or round oval in shape; surface somewhat coarse and lustreless; colour, soft, warm, or buffy white. Examples in same clutch frequently vary much in character and colour of the markings. One of a pair is richly marked around the upper quarter with blotches and smudges, mostly confluent, of dark reddish-brown, the other being lightly clouded all over (except on either end, which is more spotted) with rufous-brown; inside lining of the shell yellowish-green. Dimensions in inches: (1) 2.06×1.53 , (2) 2.0×1.57 . (Plate 3.)

Observations.—The two first recorded nests of the Square-tailed Kite were discovered almost simultaneously in November, 1839—one by Gould himself on the Upper Hunter River, New South Wales; and the other by his able coadjutor, Gilbert, at the opposite side of the Continent, in Western Australia. In Gould's nest was a pair of eggs, while Gilbert's contained two young ones scarcely feathered. This nest was the usual structure of sticks placed on a horizontal branch of a white gum-tree in a dense forest.

Six-and-forty years after these illustrious naturalists, I find myself wistfully gazing at a Hawk's nest, about seventy feet above me, in a slanting forked branch of a gum-tree. Yes; and the bird is sitting. A stick thrown half-way up rustles amongst the branches, and away soars a Kite, its square-fashioned tail leaving no doubt as to its identity. Fortunately I am accompanied by Mr. Harry Barnard, and, in almost less time than it takes to write these sentences, he has climbed the tree, and descended with a pair of the most handsomely marked of Hawk's eggs. They are now in my cabinet with date, "Coomooboolaroo, 10th October, 1885." I shall never forget that week, for we took no less than five different species of Hawks' nests, each with a pair of beautiful fresh eggs. They were—Whistling Eagle, Australian Goshawk, Little Falcon, Brown Hawk, and Square-tailed Kite.

All these birds—indeed, the majority of the Hawk tribe—will lay again in the same nest if robbed, or use again the previous season's nest, or even exchange nests, as the following Coomooboolaroo note proves:—"Hawk's nest appropriated as follows: first by a Square-tailed Kite, then by a Brown Hawk, succeeded by a Sparrow Hawk."

On examining the lining of one of the Kite's nests, Mr. Chas. Barnard found attached to one of the green branchlets a Honey Eater's (*Ptilotis fusca*) nest, containing a half-grown young bird, dead of course. Had the Hawk attacked the Honey Eater for food, or simply broken off the branchlet for nest building?

The last three months of the year are probably the principal breeding time of the Square-tailed Kite. However, in July (1896), during the early part of the Calvert Expedition, Mr. Keartland observed a nest of this Kite containing a fully-fledged young one.

18.—GYPOICTINIA MELANOSTERNA, Gould.—(20)

BLACK-BREASTED BUZZARD.

Figure.—Gould: Birds of Australia, fol., vol. i, pl. 20.

Reference.—Cat. Birds Brit. Mus., vol. i, p. 335.

Previous Descriptions of Eggs.—Bennett: Proc. Linn. Soc., N.S. Wales, vol. vi., p. 146 (1881); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 413 (1882); Campbell: Southern Science Record (1883); also Proc. Austr. Assoc., vol. vi., p. 434 (1895); North: Austr. Mus. Cat., p. 13, pl. 5, figs. 3, 4 (1889).

Geographical Distribution.—Interior provinces of Australia in general.

Nest.—Large, resembling a Wedge-tailed Eagle's (*Uroaetus audax*) aerie; roughly constructed of sticks, and generally situated in the thick fork of a tree.

Eggs.—Clutch, two; round oval in shape; surface somewhat coarse and lustreless; colour, dull white; (1) has a few indistinct large brownish blotches about the centre of the egg, and is covered all over with dark purplish hieroglyphics; (2) is blotched all round the centre and about the larger end with dark-brown, intermingled with a few indistinct purplish blotches. Dimensions in inches: (1) 2.5 × 1.77, (2) 2.49 × 1.92. An odd example has a buffy-white ground mottled all over, thickest on the apex, where the markings are confluent, with rufous-brown, and measures 2.63 × 1.98 inches. (Plate 3.)

Observations.—This exceedingly fine bird of prey is not a common species, and appears to be confined to the plains of the interior, especially those bordering rivers. In size, the Black-breasted Buzzard comes next to the Wedge-tailed Eagle and the Sea Eagle. Although noted in all the States (Tasmania excepted), it is by no means a common species. Gould, who named the bird, procured one during his journey into the interior of New South Wales. He observed that the Buzzard generally flies high, soaring in large circles, much after the manner of the Wedge-tailed Eagle, which it resembles in its general brown colour; but its black breast and the large square patch of white on each wing are very conspicuous when viewed from beneath. The white patch, a field observer remarks, looks as if a small window-pane had been let into each wing. The bird is 22 to 24 inches in length, which is decidedly short for its general size; wing 20 inches, and tail 8½ inches.

Gould did not succeed in procuring the eggs of the Black-breasted Buzzard, leaving Mr. Bennett, Dr. Ramsay, and myself to make a rush "for places" long years afterwards. I think we finished in the order named, with this disadvantage to myself—that the eggs I described did not become my property.

The only nest of the Buzzard I have observed was near Moulamein. Riverina. It was slightly smaller than the Eagle's aerie, was situated in the fork of a dead tree, at no great height above ground; but the

tree, being barkless and "greasy," was difficult to climb; therefore the inside of the nest was not inspected. The Buzzard was observed in the vicinity, but did not appear to be sitting. When we retired to a distance, Ravens came and wrangled with each other at the side of the nest, most probably over some flesh that the old Buzzard had left for its young. It was then the 18th September.

The chief breeding months of the Buzzard may include from August to November.

"The natives, Mr. Drummond and his son, Mr. Johnson Drummond, tell me," says Gilbert, "that this bird is so bold that, upon discovering an Emu sitting on her eggs, it will attack her with great ferocity until it succeeds in driving her from the nest, when, the eggs being the attraction, it takes up a stone with its feet, and while hovering over the nest lets it fall upon and crush them, and then descends and devours their contents." Gould adds: "It is to be wished that persons favourably situated would ascertain if the story of the birds breaking the eggs of the Emu be correct, or if it be one of the numerous myths of the aborigines." However, the aborigines are correct for once, and the fact has been circumstantially established by the late Mr. K. H. Bennett, who enjoyed singular opportunities for observing the Buzzard in the interior country of New South Wales. I quote at length from Mr. Bennett, in the "Proceedings of the Linnean Society of New South Wales":—

"Its prey to a great extent consists of various reptiles—such as snakes, frill-necked and sleepy lizards; it also has the singular habit of robbing the nests of Emus and Bustards of their eggs. My first information on this point I obtained from the blacks,* and for some time I was inclined to disbelieve their assertion, though the same story was told by the blacks from all parts of the district, as it was so contrary to my experience of the *Accipitres* family. At length, however, I was compelled to alter my opinion, for I subsequently found portions of Emu egg shells in the nest of one of these Buzzards. The manner in which they effect the abstraction of the Emu eggs—as told me by the blacks—shows an amount of cunning and sagacity that one would scarcely give the bird credit for, and is as follows:—On observing a nest, the Buzzard searches for a stone, or what is much more frequently found there, a hard lump of calcined earth. Armed with this, the Buzzard returns, and, should the Emu be on the nest, alights on the ground some distance off, and approaches with outstretched flapping wings. The Emu, alarmed at this, to it, strange-looking object, hastily abandons the nest and runs away. The Buzzard then takes quiet possession, and with a stone breaks a hole in the side of each egg, into which it inserts its claw and carries them off at its leisure, for when the eggs are broken the Emu abandons the nest. So much for the blacks' story.

"This, however, is in a great measure corroborated by a friend of mine who lives on the adjoining station, and who told me that in August last (1881) he found the nest of an Emu containing five eggs, and all of them had a broken hole in the side, and that the fracture had been done

* Mr. Bennett has probably inadvertently overlooked the fact that a blacks' story is likewise mentioned in Gould.

quite recently, and in the nest also was one of these lumps of calcined earth about the size of a man's fist.

"In a nest to which I recently ascended, I found amongst the remains of various reptiles the shells of a couple of Bustard's eggs. In the nest were a couple of young Buzzards lately hatched."

With regard to the nidification of the Black-breasted Buzzard, Mr. Bennett proceeds to state:—"It usually lays about the middle of August, and the young leave the nest about the beginning of December. If undisturbed, the old birds resort year after year to the same nest, but, should it be robbed, they abandon it for ever, and it is never occupied by the same species again, although other species of Hawks, notably the Brown Hawk, sometimes take possession. I have never known a Buzzard to touch carrion or feed upon anything it did not capture, and except at the nest I have never seen them perch on a tree, but have often seen them perch upon the ground. The note, which is something between a whistle and a scream, is only uttered when visiting the nest."

19.—ELANUS AXILLARIS, Latham. —(23)

BLACK-SHOULDERED KITE.

Figure—Gould: Birds of Australia, fol. i., pl. 23.

Reference.—Cat. Birds Brit. Mus. vol. i., p. 328.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. ii., p. 109 (1878). North: Austr. Mus. Cat., p. 14, pl. 3, fig. 6 (1889).

Geographical Distribution.—Whole of Australia.

Nest.—Comparatively bulky, constructed of sticks and twigs, and usually situated in the forked branches of a tall tree.

Eggs.—Clutch, three to four; roundish in shape; texture of shell somewhat coarse; surface slightly glossy; colour, bluish-white, heavily blotched or smeared all over with rich reddish-brown or chocolate; inside lining, light greenish tinge. Dimensions in inches of a proper clutch: (1) 1.67 × 1.23, (2) 1.62 × 1.26, (3) 1.6 × 1.26. (Plate 3.)

Observations.—As Gould states, although this beautiful Kite ranges over the Australian Continent, the bird is only thinly dispersed. The last specimens I happened to observe in Victoria were a beautiful pair which were hawking over the rich alluvial flats of Bacchus Marsh, 28th March, 1889.

Dr. Ramsay states: "During the last six years several pairs of these Hawks have been known to breed on the Jindah Estate, on the Mary River, in Queensland, but it was only in November last (1877) that a pair gave my brother (Mr. John Ramsay) an opportunity of taking their nest and eggs. The nest in question was placed among the topmost forked branches of a *Flindersia*, and, as usual, composed of sticks and twigs; it was, however, a bulky structure, as is often the case with Australian Hawks' nests. The eggs were three in number, but my brother assures me that four is the correct number for a sitting."

While under the Liverpool Range, Gould shot a young Black-shouldered Kite which had not long left the nest. He therefore conjectured that the bird bred within the State of New South Wales. The conjecture has since proved correct, for Mr. North has described, from Dr. Cox's collection, a very handsome set of eggs of this species, taken near the Hawkesbury River.

Moreover, Mr. S. W. Jackson has kindly sent me some interesting notes of an invasion of Black-shouldered Kites that occurred in his district, South Grafton, 1897. He writes:—"Black-shouldered Kites arrived here in great numbers in May, and it was quite a common occurrence to notice a pair of birds on almost every farm field on the river.

"On the other hand, what appeared to be the Letter-winged species was rarer, as I only noticed about seven or eight pairs to the many dozen pairs of Black-shouldered Kites. However, both species have now (September 10th) become still less, and I fancy many of them have left the district. During my residence here, a period of six years, I never noticed these Kites in such numbers, and I always looked upon them previously as birds of great rarity, as in former seasons I only noticed two or three pairs of the Black-shouldered variety on the river, and it is four years since I saw a Letter-winged Kite about the district; therefore I have come to the conclusion that the birds have been driven to the rivers, owing to the drought prevailing in the interior portions of the State. They obtain all their food from off the ground, and do not feed on grubs, &c., off the tops of eucalyptus trees, as the Crested Hawk and others usually do."

Mr. Jackson has also thoughtfully forwarded me for examination examples selected from three types of these beautiful Kites' eggs, which he himself took: (*a*) is like those I have described, buffy-white, heavily blotched and smeared all over with rich reddish-brown or chocolate; (*b*) is mottled all over the entire surface, obscuring the ground-colour, like those of a Brown Hawk; while (*c*) has a bluish-white ground-colour, with heavy chocolate blotchings on the apex, and few markings elsewhere. Dimensions in inches: (*a*) 1.67 × 1.23, (*b*) 1.62 × 1.26, (*c*) 1.6 × 1.26.

The Kites arrived again the following season, the chief breeding months being June, July and August.

The illustration of the nest of the Black-shouldered Kite is from a photograph by Mr. Jackson.

20.—ELANUS SCRIPTUS, Gould.—(24)

LETTER-WINGED KITE.

Figure—Gould: Birds of Australia, fol., vol. i., pl. 24

Reference.—Cat. Birds Brit. Mus., vol. i, p. 340.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, p. 55 (1865); North: Austr. Mus. Cat., p. 15 (1889) Campbell: Proc. Austr. Assoc., vol. vi., p. 434 (1895).

Geographical Distribution.—Queensland, New South Wales, Victoria, South and West Australia.



NEST OF THE BLACK-SHOULDERED KITE

From a Photo by S. W. Jackson

Nest.—Constructed of sticks, lined with rubbish (chiefly pellets composed of rats' fur ejected from the stomach of the birds), and situated in a tree. According to Gould, in some localities the nests are placed as near each other as possible, in companies.

Eggs.—Clutch, four; round oval in shape; surface of the shell somewhat fine, with least perceptible trace of gloss; ground-colour, where visible, buffy-white, heavily mottled and blotched all over with chestnut or dark reddish-brown. Inside lining of the shell, yellowish-green. Dimensions in inches: (1) 1.79 × 1.33, (2) 1.74 × 1.32. Gould, on the authority of the late Mr. S. White, states the markings are easily removed by wetting.

Observations.—The Letter-winged Kite does not enjoy such an extensive range as the preceding species, being more limited to interior provinces.

Taking this species in conjunction with the preceding one, they are indeed beautiful creatures, which soar with graceful movements, and are too harmless and delicate in structure to be associated with the ferocious Hawk tribe. They feed almost exclusively on insects, but sometimes catch mice and other "small deer." The most prominent markings in one species are its black shoulders, which naturally give rise to its name, Black-shouldered Kite (*Elanus arillaris*). The principal character by which the other species is distinguished is a black marking on the under surface of the wing, which, following the line of the bones from the body to the union, assumes, when the wing is expanded, the form of the letter V, or if both wings are viewed from beneath at the same time, that of a W divided in the centre by the body of the bird—hence the very appropriate name Letter-winged Kite (*Elanus scriptus*). These truly elegant creatures are both about 12 inches or thirteen inches in length; with wing 11 inches, and tail 6 inches, the expanse of the wings from tip to tip being about 3 feet. Some theorists on the colouration of birds' eggs say Hawks usually lay sanguinary-marked eggs, because the birds by nature are sanguinary minded—but one of the most bloodthirsty, the Radiated Goshawk, for example, lays almost white eggs, while the simple-minded insect catchers, the Black-shouldered and Letter-winged Kites, lay specimens that have all the appearance of having been literally steeped in gore, so red and heavy are their markings.

SUB-FAMILY—FALCONINÆ: FALCONS.

21.—BAZA SUBCRISTATA, Gould.—(25)

CRESTED HAWK.

Figure.—Gould: Birds of Australia, fol. i., vol. i., pl. 25.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 357.

Previous Descriptions of Eggs—Gould: Birds of Australia, Handbook, vol. i., p. 57 (1865); Ramsay: P.Z.S., p. 392 (1867); North Austn. Mus. Cat., pl. 2, fig. 5 (1889); Campbell: Proc. Austrn. Assoc., vol. vi., p. 436 (1895).

Geographical Distribution.—Northern Territory, Queensland, New South Wales, and interior of South Australia (?).

Nest.—Somewhat flat, constructed of dead sticks, lined with a thick layer of green leaves (*Eucalypt*); usually situated high (from sixty to one hundred feet) in a tall tree. Dimensions over all, 15 inches; egg cavity, $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, three to four, rarely five; roundish in shape, but sometimes inclined to be pointed at one end; surface of the shell comparatively fine; in other examples, rough and granulated, with a slight trace of lustre; colour, usually uniform bluish-white, but in some instances very meagrely blotched and spotted with light-brown. Dimensions in inches of odd eggs: 1.7×1.42 (round example); 1.75×1.39 (pointed example); of a pair: (1) 1.69×1.36 , (2) 1.65×1.34 .

Observations.—For the eggs of this fine and singular Hawk I am indebted to the late George Barnard, of Coomooboolaroo, from whom I received them in 1883. They tallied with the description of the single egg furnished by Gould. However, Dr. Ramsay redescribed other eggs of the Crested Hawk, in 1867, with the following information:—"I was fortunate enough to procure three eggs of this species taken by Mr. Macgillivray's blackfellow, 'Daddy.' Mr. Macgillivray informs me that, when 'Daddy' was taking the eggs, the female dashed so close to him that he killed it with his tomahawk. The male bird belonging to the nest had been shot the day before. The nest was a comparatively small structure of sticks, and placed upon a horizontal bough, at a considerable distance from the ground. The eggs have the peculiarity of being very much rounded at the large end, are short upon the whole, and have the thin end pointed abruptly."

I extract the following from notes Mr. S. W. Jackson, South Grafton, has kindly furnished me on the Crested Hawk:—"I have found ten nests of this species during the past four seasons. There were eggs in five of them, and the remaining five contained three birds (young) each. The Crested Hawk generally builds very high, being at an altitude of ninety to one hundred feet, but I have found some of the nests as low down as fifty-five feet. I have never experienced any trouble robbing their nests, as the birds are very quiet, and fly to a tree a few hundred yards away, returning to nest after our climbing operations are finished, and showing no signs of flight. The trees usually selected for their nests are, viz.:—(1) spotted gum (*Eucalyptus*); (2) apple tree (*Angophora*); (3) bloodwood (*Eucalyptus*). I never found nests in any other trees. The Crested Hawk seems to procure most of its food from the tops of eucalyptus saplings, which contain many grubs, beetles, &c."

However, "exceptions prove the rule." This Hawk has been seen flying with a snake in its talons. Therefore, it occasionally procures its food upon the ground, unless the reptile seen was a tree-snake.

Usual breeding months September to November.

22.—FALCO MELANOGENYS, Gould.—(8)

BLACK-CHEEKED FALCON.

Figure—Gould: Birds of Australia, fol., vol. i., pl. 8.

Reference.—Cat. Birds. Brit. Mus., vol. i., p. 385.

Previous Descriptions of Eggs—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 27 (1865); North: Austr. Mus. Cat., p. 16, pl. 3, fig. 4 (1889); also Records Austr. Mus., vol. ii., p. 13 (1892); Campbell: Proc. Austr. Assoc., vol. vi., p. 437 (1895); Le Souéf: Ibis, p. 422 (1895).

Geographical Distribution.—Australia in general, and Tasmania; also Moluccas and Java.

Nest.—Usually a crevice or ledge on an inaccessible cliff on the sea-coast, sometimes on perpendicular rocks inland; a hollow spout of a tree, or even a deserted stick nest of a larger bird is also appropriated. Instances have been known of a covert of tussock-grass being chosen on the plains.

Eggs.—Clutch, three; round oval in shape; texture of shell somewhat fine; surface slightly glossy; ground-colour buff, which is scarcely perceptible, being obscured by the freckles and other small markings of pinkish-red, in some examples with rufous-brown. Upon these markings, again, sparingly distributed, are large markings or blotches of dark-red or brown, which seem peculiar to the eggs of this Falcon. Pinkish-red specimens may appear in the same set with a rufous-brown one. As in all Falcons' eggs, the inside lining of the shell, when held up to transmitted light, is a buffy-colour. Dimensions in inches of a proper clutch: (1) 2.05 × 1.59, (2) 2.03 × 1.56, (3) 2.02 × 1.59. (Plate 4) This description is taken from a very beautiful clutch presented to me by my young friend, Mr. Charles French, junr. Its history is mentioned further on.

Observations.—This fine, bold, and dashing Falcon is a widely distributed species frequenting, in pairs, wild rocky regions of the coast or cliffy localities inland suitable to the bird's nature. It is really a splendid creature, with head, cheeks, and back of neck dark-brown, almost black; the back and wings are grey, beautifully mottled or dappled with blackish-brown; the underneath parts are delicate fawn-colour, crossed by irregular bars of dark-brown; while in common with all our Australian Falcons it may be remembered that the cere and legs are nearly always yellowish; bill and feet of a somewhat bluish lead-colour, and keen dark-brown eyes. The size of the Black-checked species is about 15 inches; wing, 11½ inches; tail, 5¾ inches.

In writing to me in 1886, Mr. E. D. Atkinson mentions he found in an almost inaccessible position three eggs of this Falcon, far incubated, on the top of a cliff (not on the face) on an island off the north-west coast of Tasmania. The date was 8th of October.

In the Australian Museum Catalogue, and quoting valuable correspondents, Mr. North furnishes some extremely interesting notes regarding

the nesting of the splendid Black-cheeked Falcon:—"On the 4th October, 1888," writes Dr. L. Holden, of Circular Head, Tasmania, "I found a nesting-place of the Black-cheeked Falcon on the cliffs that bound Sisters' Beach on the south-east; it was the same place that Mr. Atkinson obtained his nest on the 10th September, 1887. The eggs were three in number and hard set, but could be blown, and laid on the rock without any nest, the ledge being about ten or twelve feet from the base of the cliff, and quite easily reached by a zigzag approach scarcely to be called a climb, the projecting rocks forming an easy stairway." Again, "I took a clutch of Falcon's eggs last Saturday, the 26th September, 1891, from the same spot to an inch which I robbed in 1888. It is not a bare rock where the eggs were found; there is a covering of grit and *detritus*."

Mr. North also states that the late Mr. K. H. Bennett found a nest of this species at Mount Manara, in the Wilcannia district, New South Wales, on the 9th September, 1885, which contained three eggs. The nest was about seventy feet from the ground, and very difficult to obtain, being placed upon the face of an almost perpendicular rock. Upon visiting the same place the following year in the month of October, Mr. Bennett found that the same pair of birds had repaired the old nest, and that it contained a single fresh egg; but, when disturbed again by his climbing to it, they abandoned it, and built a new nest a few yards higher up out of reach, the rock on which it was placed completely overhanging the site of the old nest.

This Falcon appears very local in its habit. On Cape Wollamai, Western Port, a pair of birds could always be found, but we could never find the nesting-place, which was no doubt somewhere on the face of that bold headland. During the visit of the Field Naturalists' Expedition to Kent Group, Bass Strait, November, 1890, two young Falcons in down were observed on a precipitous rocky ledge, where were the remains of Prions, &c., on the isolated North-east Isle. The old birds were furious, and one even struck our leader (Mr. D. Le Souëf) in the rear, as he was crawling along the projecting shelves of rocks.

From Mr. Davis, who was attached to a railway survey camp in the Wimmera district, Victoria, I gathered the following information:—He found the eggs of the Black-cheeked Falcon in the hollow of a dry tree close to Lake Hindmarsh. When hatched, he sent the young birds to Mr. Charles French, Government Entomologist. Mr. French thoughtfully brought them under my notice. Again, on the 18th August, 1889, Mr. Davis took fresh eggs of the Falcon, this time from a Wedge-tailed Eagle's nest, which was situated in a red gum-tree near a swamp called Brambrook, about twenty miles north from Lake Albacutya. When climbing the tree, one of the birds attacked Mr. Davis, and would have struck him, had he not waved his hat in a frantic manner. But when the nest was actually reached, it was a pretty sight to witness the male bird perched on the opposite side of the great nest, and daringly, and I may say nobly, with uplifted wings disputing the removal of the eggs, notwithstanding by robbery the Falcon itself had annexed the Eagle's nest. These eggs ultimately found their way into my collection, and are certainly unique, if only for their interesting history.

The breeding months of this Falcon are from August to November.

23.—FALCO HYPOLEUCUS, Gould.—(7)

GREY FALCON.

Figure.—Gould: Birds of Australia, fol., vol. i, pl. 7

Reference.—Cat. Birds Brit. Mus., vol. i, p. 394

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii, p. 414 (1882), North. Austr. Mus. Cat., pl. 3, fig. 3 (1889). Campbell: Proc. Austr. Assoc., vol. vi, p. 438 (1895).

Geographical Distribution.—Australia in general.

Nest.—Constructed of sticks and twigs, and situated in a tall tree. Probably a nest built by another large bird is used.

Eggs.—Clutch, three (and four probably); roundish in shape, more compressed at one end; texture of shell comparatively fine; surface slightly glossy; colour, apparently buffy-white, almost entirely obscured by blotches and freckles of rufous or yellowish-brown, while the ends, sometimes the larger, at other times the smaller, are marked with stale gore-like blotches. Most resemble those of the Brown Hawks. Dimensions of two pairs from Central Australia: A (1) 2.02 × 1.57, (2) 1.99 × 1.53; B (1) 2.0 × 1.55, (2) 1.98 × 1.53.

Observations.—The name Grey adequately describes this extremely fine Falcon. Dr. Ramsay, who first described its eggs, states:—"This is a rare species, not plentiful in any part of Australia, but occasionally obtained in the northern portion of the interior of Queensland, and Mr. Gould records it from Western Australia. I am indebted to Mr. J. B. White for specimens of the eggs taken on the Upper Thomson River, in Queensland."

Mr. G. A. Keartland has kindly permitted me to take my descriptions from two pairs of eggs collected for him in Central Australia.

24.—FALCO SUBNIGER, Gray.—(9)

BLACK FALCON.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 9

Reference.—Cat. Birds Brit. Mus., vol. i., p. 394

Previous Descriptions of Eggs.—Bennett: Proc. Linn. Soc., N.S. Wales, vol. x., p. 167 (1885); Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1142 (1886), North: Austr. Mus. Cat., pl. 3, fig. 1 (1889).

Geographical Distribution.—Australia in general.

Nest.—Usually a stick-built home of another bird of prey or other large bird, and situated in a tree, or, in the far interior, sometimes placed on a bush.

Eggs.—Clutch, three to four; roundish oval in shape; texture of shell comparatively fine; surface without gloss; colour, light-buff or buffy-white, marbled and blotched all over with bright rufous-brown or

rusty-brown, and a few dull markings of purplish-brown. Most resemble those of the Black-checked Falcon, except that the markings are redder, and the surface has no lustre. Dimensions of a pair of handsome eggs in Mr. G. A. Keartland's collection, taken in Central Australia: (1) 1.97×1.49 , (2) 1.97×1.46 ; of a set according to Dr. Ramsay: (1) 2.18×1.55 , (2) 2.13×1.58 , (3) 2.1×1.6 .

Observations.—I have never been fortunate enough to see, in a state of nature, this bold and audacious Falcon, which has been significantly called by a bush naturalist "Death on the Wing." The Black Falcon is a rare interior species.

Dr. Ramsay, in describing the eggs, states that he is enabled to do so through the exertions and liberality of the late Mr. K. H. Bennett; at the same time Dr. Ramsay refers us to Mr. Bennett's own most interesting and exhaustive account of the habits of this Falcon, the reference to which is given above.

We infer from the authorities above quoted that the breeding season usually includes September and October, and, in the far interior, December to February.

25.—FALCO LUNULATUS, Latham.—(10)

LITTLE FALCON.

Figure.—Gould; Birds of Australia, fol., vol. i, pl. 10.

Reference.—Cat. Birds Brit. Mus., vol. i, p. 398.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i, p. 30 (1865); North: Austr. Mus. Cat., p. 19 (1889); Campbell: Proc. Austr. Assoc., vol. vi, p. 439 (1895).

Geographical Distribution.—Whole of Australia and Tasmania; also Flores.

Nest.—Large for the size of the bird, being usually an old stick-built home of another Hawk, Crow, &c., which the Falcon lines again with green branchlets of eucalypts.

Eggs.—Clutch, two or three; round oval or oval in shape; texture of shell fine, but lustreless; ground-colour, buff or buffy-white, which is nearly obscured by the freckled and mottled markings of light reddish-brown or rufous. Dimensions of a clutch in inches: (1) 1.7×1.24 , (2) 1.58×1.26 . (Plate 4.)

Observations.—The Little or the White-fronted Falcon is the smallest and probably the most frequently seen of our Australian Falcons, being found throughout the Continent, as well as Tasmania. It is a bold little bird about 12 inches long, wearing a dark-grey coat, under surface reddish-brown, except the throat and chin, which are inclined to white, hence sometimes the name "White-fronted." It loves such wild rocky situations as the Werribee Gorge, Victoria, where it has been found breeding by the Messrs. Brittlebank. My experiences with this fine little fellow have been in Queensland. One afternoon, near the edge of

an interesting forest, I noticed a Bronze-wing Pigeon and a Falcon in its wake, both flying at a tremendous rate of speed; they seemed simply to cut streaks in the air. The Pigeon by reaching the timber (its only chance) evaded its bold adversary.

Here is an extraordinary scene witnessed by my friend, Mr. C. C. Brittlebank: It is morn in the full flush of spring. A Heron (*Notopteryx nove-hollandia*) rises from a swamp near, and is leisurely winging its way, when behold like a streak in the distance is seen our bold friend, the little Falcon, heading straight for the large bird. Presently the bird of prey swoops down, and, for a wonder, undershoots its mark, caused by a strategetic upward curve of the Heron, but the Hawk, equal to the occasion, and with a rapid turn, fairly throws itself at the large bird's wing, which breaks with a loud report. Then the poor bird commences to form spiral circles earthward, the game little Hawk sticking to its quarry the while. Besides my friend, others had been watching the combat—to wit, ten or a dozen Magpies (*Gymnorhina leucanota*), which now came up on hurrying wings. Then occurs upon the ground such a scene—the wounded Heron hoarsely calling, all the Magpies scolding and fiercely picking the screaming Hawk, which gets a rough time, and seems much relieved at Mr. Brittlebank's near approach, causing the much too pugnacious Magpies to scatter. The Hawk quickly follows, but in the opposite direction, and there is only left the stately Heron with a fractured carpal joint.

I possess other evidence of the bold and desperate character of the Little Falcon. A farmer friend told me how on one occasion he beheld a large white rooster in the field beheaded by the little bird of prey; while Mr. William Bateman, a duck-shooter of twenty years' experience in the Murray River district, has witnessed the Hawk put on a terrific spurt to overtake flying ducks, then, suddenly making a swoop from behind, deal a duck a blow, apparently with the edge of the wing, that fells it dead. Twice Mr. Bateman has seen Coots decapitated, and relates how he and his brother procured a Bustard or Wild Turkey without spending ammunition. The Turkey was seen to rise well out of range, and was flying away when a Little Hawk was observed coming up at right angles to the Turkey's flight, and, making an exceedingly swift cut, clean scalped the great bird. When the sportsmen picked up the Turkey it was quite dead.

A nest I saw was not less than fifty or sixty feet from the ground, near the top of a straight tree, well-balanced with boughs, and standing at the edge of a lagoon. With the generous exertions of Mr. Harry Barnard, I was enabled to place the contents of the nest—a pair of rare eggs—in my cabinet. Mr. Barnard tells me he has never known the Little Falcon to make a nest of its own, always choosing the deserted nest of some other Hawk and lining it again with green leaves.

GoULD succeeded in finding several nests of the Little Falcon both in Tasmania and on the Continent; they were all placed near the tops of the most lofty trees, and generally inaccessible. The nests were rather large structures, being fully equal in size to that of a Crow, and slightly

concave in form. In all probability they were Crows or Ravens' old nests.

In Tasmania Mr. A. E. Brent took the eggs of the Little Falcon from the broken spout of a peppermint tree (eucalypt). There was no nest save a few small sticks round about the eggs, which reposed on the rotten substance in the hollow.

26.—*HIERACIDEA BERIGORA*, Vigors and Horsfield.—(12)
H. occidentalis, Gould.

STRIPED BROWN HAWK.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 12

Reference.—Cat. Birds Brit. Mus., vol. i., p. 421.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), Handbook, vol. i., p. 34 (1865); North: Austr. Mus. Cat., p. 21 (1889); Campbell: Proc. Austr. Soc., vol. vi., p. 441 (1895).

Geographical Distribution.—Queensland, New South Wales (? interior) Victoria; South, West, and North-west Australia.

Nest.—Similar to that of the ordinary Brown Hawk, constructed of sticks and twigs, lined with leaves, &c., and situated in the fork of a tree, in some cases placed on the crown of a grass-tree (*Xanthorrhæa*). A deserted Raven's nest is sometimes used.

Eggs.—Clutch, three to four usually, rare instances five; roundish oval in shape; texture of shell somewhat fine; surface lustreless. As in those of *H. orientalis*, which they resemble, the ground-colour is buffy-white, freckled and mottled over almost the entire surface with rich reddish-brown, usually forming a patch about the larger end, in some instances on the smaller end. In common with the eggs of the other Brown Hawk, as well as those of the Falcons, the inside lining of the shell is of a buffy colour, when held up to transmitted light.

A handsome clutch taken at Quindalup, on the 18th October, 1889, during my trip to Western Australia, measures in inches: (1) 2.12 × 1.75, (2) 2.11 × 1.59, (3) 2.05 × 1.58.

Observations.—We possess two species of Brown Hawks in Australia—one frequenting the eastern part of the Continent and the other the western, but individuals often overfly their bounds or exchange localities; therefore, it is not to be wondered that some of the early authors got a bit mixed in their nomenclature. The names now stand *Hieracidea orientalis* for the Brown Hawk, *H. berigora* for the Western Brown Hawk. It is rather unfortunate that "berigora," which is the aboriginal name for the bird in New South Wales, should have been applied permanently to the Western species. To be clear about this Western variety, the bird may be recognised by its more rufous or rusty plumage, which is much lighter on the under surface; besides, there is a narrow dark stripe down the centre of each feather.

The Western or Striped Brown Hawk, although found in many parts of Australia, is not so common as the ordinary Brown Hawk, and ranges more over the vast western territory.

The two clutches of eggs kindly presented to me while in Western Australia contained each a complement of three eggs, while one was taken from a nest built on the crown of a grass-tree. Another nest I myself found was situated in a beautiful-leaved eucalypt (*E. calophylla*), locally known as the red gum-tree. The bird was sitting, but the nest was inaccessible except to such expert climbers as the Messrs. Barnard.

Near Point Cloates (Western Australia), Mr. Tom Carter, one September, took the unusual number of five eggs from a nest. He has taken eggs of the Western Brown Hawk in the same district as early as the middle of July.

Breeding months from July to November.

27.—HIERACIDEA ORIENTALIS, Schlegel.—(11)

H. herigora, Gould.

BROWN HAWK.

Figure.—Gould Birds of Australia, fol. i, vol. i., pl. 11.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 422

Previous Description of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 32 (1865); North; Austr. Mus. Cat., p. 20, pl. 3, fig. 2 (1889); Campbell: Proc. Austr. Assoc., vol. vi., p. 440 (1895).

Geographical Distribution.—Whole of Australia and Tasmania.

Nest.—Constructed of sticks and twigs, lined with leaves, strips of bark, &c., and usually situated in the forked branches of a tall tree, sometimes on bushes in the interior. Dimensions over all, 27 inches by 12 inches in depth; egg cavity, 8 inches across by 4 inches deep. Frequently another Hawk's or Raven's old nest is used.

Eggs.—Clutch, two to three, sometimes four; generally round oval in shape, more or less compressed towards one end; texture of shell somewhat fine, but lustreless. There is much variation in the appearance of different sets, even examples in the same nests differing. A common type has a buffy-white ground-colour, speckled and blotched with reddish-brown, the markings increasing in number towards the larger end, where they form a dark confluent patch. Another pair has the ground colour almost obscured by freckles and small markings of dark red or purplish-brown, with a darker patch on the large end of one specimen, and one on the smaller end of the other example. Again, another type is freckled and mottled over the entire surface with light reddish-brown. Dimensions in inches, namely:—Of a large pair taken in Queensland (1) 2.2 × 1.56, (2) 2.18 × 1.55; of an average pair taken in Victoria (1) 2.14 × 1.53, (2) 2.1 × 1.57; of a small pair (selected) (1) 2.06 × 1.18, (2) 1.97 × 1.45. (Plate 4.)

Observations.—There is probably no bird of prey so frequently seen throughout Australia and Tasmania as the common Brown Hawk. Its name describes its plumage, which is brownish in colour, with perhaps

the throat and chest of a paler shade or buff. Bill and legs are bluish or lead-colour, and no specimens are more common in collections than its rusty-brown eggs.

The eggs in my cabinet are from two nests, of which I witnessed the taking. One was found near Bagshot, Victoria, on the 4th October, 1880; the other in Queensland, 13th October, 1885. There was only a pair of eggs in each instance, which, however, were perfectly fresh, and may not have been the full complement. When one is on official leave of absence it is not always convenient to wait the development of full clutches, however desirable in the interests of knowledge. Then there is the old adage that "a bird (and I suppose an egg, for the greater includes the less) in the hand is worth two in the bush."

Mr. H. C. Burkitt, formerly of Cooper's Creek, kindly sent me a pair of Brown Hawk's eggs from a set of four which he states he took from a nest built on a needle (*Hakea*) bush.

The Brown Hawk, instead of building for itself, frequently uses the old nest of such birds as a Kite or other Hawk, or Raven. It is said that the Brown Hawk will at times lay in hollow trees in the great North-western interior of Queensland.

On one occasion, when Mr. G. E. Shepherd, Somerville, was climbing to a Brown Hawk's nest, one of the birds appeared overhead having a copper-headed snake, about two feet long, writhing in its talons. Fortunately the Hawk did not drop the reptile on the climber, or he might have dropped too.

Breeding months include August to November, the principal being September and October, and sometimes in Northern Queensland from Christmas to the end of February.

Concerning this common Hawk, one of Mr. Keartland's interesting North-west notes reads:—"These birds were found in great numbers in the early and latter parts of our journey, but very few were seen in the desert. In August several nests containing young were found, and our party were interested in watching the assiduity with which the old birds carried out their paternal duty. From before daybreak until long after dark at night their cries might be heard as they flew over our camp, carrying lizards, &c., to their clamouring broods. Near the Fitzroy River they were found building their nests in March."

Young in down are rufous-coloured.

28.—*CERCHNEIS CENCHROIDES*, Vigors and Horsfield.—(13)

NANKEEN KESTREL.

Figure.—Gould: *Birds of Australia*, fol., vol. 1, pl. 13.

Reference.—Cat. *Birds Brit. Mus.*, vol. i., p. 431.

Previous Descriptions of Eggs.—Gould: *Birds of Australia*, Handbook, vol. i., p. 36 (1865); North: *Austn. Mus. Cat.*, p. 22, pl. 3, fig. 5 (1889); Campbell: *Proc. Austr. Assoc.*, vol. vi., p. 442 (1895).

Geographical Distribution.—Australia generally and Tasmania.

Nest.—A crevice in a cliff, a hollow spout of a tree, or a deserted nest of a Crow or Raven. In the far North-west a hole in an ant-hillock has been used.

Eggs.—Clutch, four to five usually; roundish in shape, slightly compressed at one end; texture of shell fine, with a perceptible trace of lustre or gloss on the surface; ground-colour, buffy-white, in some instances freckled all over with reddish-brown, but more generally blotched as well with rich reddish-brown, and forming a patch upon one end of the egg, usually the larger, but sometimes on the smaller. In other specimens the markings are of a rich, dark, pinkish-red. Dimensions in inches of a full clutch: (1) 1.52 × 1.14, (2) 1.51 × 1.18, (3) 1.5 × 1.18, (4) 1.49 × 1.19, (5) 1.49 × 1.15. (Plate 5)

Observations.—This exceedingly graceful bird, and, if we except the Sparrow Hawk, the smallest of our Australian Hawks, is common throughout Australia and Tasmania. The Nankeen Kestrel cannot well be mistaken, with its buffy-white under-parts, and wings cinnamon red, with primaries and secondaries dark-brown. The grey tail terminates with a black band, which, in turn, is tipped with white; cere and legs are yellowish-orange; bill horn-coloured, tipped with black. Total length, between 11 inches and 12 inches; wing, 9¼ inches; tail, 6¼ inches. The Kestrel flies over forest or plain alike, but, if anything, is partial to plains that are broken with belts of low timber. Whether we see the bird circling on high on motionless wings or poised in mid-air over a particular spot with wings rapidly beating, as if the bird is watching something on the earth below, its actions are the poetry of grace and ease. The Kestrel is almost insectivorous in its diet. If the elegant little bird has another prominent virtue it is that it kills small snakes—which of course, would grow into large ones—and mice. Who would kill such a bird of usefulness?

I possess a lively recollection of the first Kestrel's nest I robbed. It was one 9th November. The nesting-place was simply on the dust within a crevice or crack in an overhanging red cliff of the Werribee River, near its mouth. Some trouble and risk were incurred in climbing the cliff's face. The eggs were apparently much incubated; therefore were carefully packed in the "billy," to be operated on at home. On the journey thither from the Werribee station, the portion of the train I entered was derailed, and I nearly lost my precious specimen and my life.

Gould once took four fully-fledged young birds from a hollow tree by the side of a lagoon in the interior of New South Wales. I have witnessed Kestrels entering a hollow spout of a tree overhanging the Werribee River, where I had no doubt the birds were breeding. We have also Gilbert's note from Northern Australia, which he recorded when attached to Dr. Leichhardt's Expedition: "October 2nd. Found for the first time the egg of *Tinnunculus cenchroides*, four in number, deposited in a hollow spout of a gum-tree overhanging a creek. There was no nest, the eggs being merely deposited on a bed of decayed wood." On the 28th August, 1896, at the beginning of the ill-fated Calvert Expe-

dition, Mr. G. A. Keartland took four Kestrel's eggs from the hollow spout of a dead tree near the camp. Curiously enough the nesting-place was lined with pellets of camel's dung.

Gould also observed nests which he supposed were constructed by the Kestrel, but saved himself by surmising that possibly they may have been deserted domiciles of Ravens or Crow Shrikes. The great naturalist's surmise has since proved correct.

My next adventure with Kestrels was many years after the railway "incident," with my namesake, Mr. Charles E. Campbell, among the belts of "box" timber on the plains, near Pyramid Hill, Victoria. All our finds were taken from Ravens' old nests, and usually the full complement of five eggs. In some cases, many Ravens' nests containing their own eggs were in the same tree with the Kestrels. The following are taken from my notes:—

4th October, 1884.—Found Kestrel's (*i.e.*, a Raven's) nest with young and one egg. Ravens' nests with young also in the same tree.

6th October, 1884.—Took out of Raven's old nest 5 Kestrel's eggs.

7th " " " " 4 " "

9th " " " " 5 " "

I possess a note from South Australia by Mr. James C. McDougall, stating that the Nankeen Kestrel there nests commonly in Ravens' nests, laying four eggs; while on the western side of the Continent Mr. Tom Carter has recorded for me:—"September 22nd: five Kestrel's eggs on the Minilga River." "November 8th and 15th: Eggs just hatching. Twenty-five miles inland from Point Cloates." Also he noted the remarkable discovery of a Kestrel's nest in one of the ant-hillocks, which are conspicuous features in the country thereabouts and elsewhere northward.

Breeding months of the Kestrel may include from August to November or to December.

Sub-order—Pandiones: Ospreys.

29.—PANDION HALIAETUS (sub-species) LEUCOCEPHALUS, Gould.—(6)

WHITE-HEADED OSPREY.

Figure.—Gould: Birds of Australia, fol. vol. i, pl. 6.

Reference.—Cat. Birds Brit. Mus., vol. i., p. 451.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 23 (1865); Ramsay: P.Z.S., p. 578 (1875); North: Austn. Mus. Cat., p. 23, pl. 5, figs. 1-2 (1889); Campbell: Proc. Austn. Assoc., vol. vi., p. 443 (1895).

Geographical Distribution.—Australian coast in general and Tasmania; also New Guinea and Moluccas.

Nest.—A structure of great size, about four feet high by the same dimension in breadth, built of sticks, with a shallow cavity lined with

seaweed. Usual situation an inaccessible rock or island, but low timber near water is sometimes chosen.

Eggs.—Clutch, three to four; shapely or roundish oval in form; texture of shell, somewhat granulated, surface of soft appearance and usually lustreless; ground-colour, buffy or yellowish-white. In three examples of a splendid set taken from an aerie near the mouth of the Margaret River (W.A.), the markings are mostly large and bold blotches of rich, dark, purplish-brown, more numerous about the upper half of the egg, and forming a large confluent patch almost black on the apex; while the fourth egg is not so heavily blotched, the markings of pinkish-brown, intermingled with dull purple, being lighter and more evenly distributed over the surface; inside lining of the shell, when held up to the light, dull yellowish-green. Dimensions in inches: (1) 2.48 × 1.77, (2) 2.44 × 1.8, (3) 2.42 × 1.79, (4) 2.42 × 1.74. (Plate 5.)

Observations.—The Osprey in maturity is somewhat like the Sea Eagle, with brownish coat and white underneath parts, but in the Osprey the white head is mottled with a few dark feathers and the chest with brown, cere lead-colour, bill black, feet bluish-white, and bright eyes of yellowish-orange. It is a smaller bird than the Sea Eagle, as the dimensions show—Length, 21 to 24 inches; wing, 19 inches; tail, 8½ inches.

My only experiences with this expert Fishing Hawk were in Western Australia. With departing daylight we arrive at Wallcliffe, the homestead of Mr. A. J. Bussell, on the Margaret River. By kind invitation we remain here a day, and I improve the occasion by exploring for objects of interest, and am not disappointed. I learn there is a Fish Hawk or Osprey's nest a mile or so up the coast. Ah! methinks, what a rare subject for the camera. Good-naturedly Mr. Bussell promises to pilot Mr. Mansfield and myself to the aerie in the morning, and at the time appointed away we go joyfully. We are suddenly confronted by the broad stream, seventy or eighty yards across, of the Margaret River. "How are we to cross, Bussell?" I inquire. "Wade, of course," was the reply. "May I ask is it deep?" "Only up to your armpits," was the anything but reassuring answer; and now occurred to me the reason of Mr. Bussell's thrusting a towel into his coat pocket before leaving the house. However, there was no help for it. Bussell soon led the way with his undergarments gathered under one arm, his boots in his teeth, and his unmentionables held high in the air with the other hand. When Mansfield, who is shorter in stature, reaches the centre of the stream, there is scarcely anything visible except his broad-brimmed straw hat of sombrero proportions. Oh, if I only had my camera on shore, instead of upon my head, with these cooling waters lapping around my ribs, what a comical picture I might have taken of the pair. I thought. We are soon dressed, and tearing over scrubby sandhills, reaching the ocean just in time to see the steamer "South Australia" rolling by on a heavy swell. We round a sharp corner, when Bussell suddenly exclaims, "There's the Fish Hawk's nest!" Sure enough it was, and a very conspicuous object, built on a small isolated rock, with the birds posing near. Bussell, who was fuller of actions than words,

commenced to "peel off" again, and I quickly learnt there was to be another Margaret River episode, as the blue waters rolled between the rocky aerie and the land. But the thought of a successful photograph, and perchance a clutch of rare eggs, are too much when laid in the balance with temporary discomfiture, so I am soon semi-clad, following my guide with uncertain gait over the sharply-pinnacled reefs. Fortunately, the tide is low. Breathless we reach the aerie, which is only tenanted by fledglings. The camera is quickly adjusted, the tripod resting amongst brittle saltbush, where young gulls were hiding. While Bussell examines the young Ospreys, the drop-shutter descends, and he is immortalised. The illustration gives a capital idea of the nest, with the mainland as a background. The nest, with slightly hollowed top, is about 4 feet high, with a circumference of about 13 feet, constructed of sticks and roots, and situated about twenty-five feet above high-water mark. The old birds now circling on high, where their white heads are just distinguishable from their dusky body against the azure sky, are uttering piercing cries of solicitude for the safety of their helpless offspring below.

The exact date of the foregoing was the 5th November, 1889. Mr. Bussell compensated for my disappointment at finding only young by presenting me with a full clutch of the unusual number of four eggs that he had removed from the Osprey's aerie the previous season.

On the 21st December I examined another Osprey's aerie containing fully-fledged young on Direction Rock or Byers Island, off Rottnest Island. The nest was at one end of the rock, while the other end was occupied by scores of handsome Crested Terns (*Sterna bergii*), all prosecuting their task of incubation, perfectly fearless of their large raptorial friends. I thought this somewhat remarkable, for, dearly as the Osprey loves fish, it is by no means adverse to fowl. Time did not permit of my visiting another aerie which was reported to me on Rottnest Island, but we possess good Gilbert's record of measuring one there fifteen feet in circumference.

While on the Blackwood River, near Cape Leeuwin, I learned from the Misses Ellis that they robbed an Osprey's (or, as they called it, a Fish Hawk's) nest three times in one season. Each time three eggs formed the clutch. Once the birds built their nest on snags in the river, then removed to a tea-tree (*Melaleuca*) on the bank.

The following is a note referring to the Osprey, I made in December, 1889, at Houtman's Abrolhos Islands, about fifty miles off Champion Bay:—"More common than the White-bellied Sea Eagle. One day, as the German barque 'Capella' was riding at anchor in Good Friday Bay, each of the mastheads was occupied by one of the noble birds. In addition to fish, the Osprey is very partial to the little White-faced Storm Petrel (*Pelagodroma marina*), and a rough-tailed lizard (*Egernia stokesi*), common upon Rat Island. Lays in September."

Still further north, along the same coast, I am informed by Mr. T. Carter that he received from Frazer Island an egg of the Osprey, taken at the beginning of August, 1893.

With regard to the Pandion nesting on the eastern coast, Dr. Ramsay described eggs in 1875; and Mr. North again recently described two eggs



OSPREY'S NEST, WITH YOUNG

From a Photo by the Author

taken by Mr. John S. Ramsay, on the 15th August, 1880, from a nest in the Wide Bay district, and another clutch of three eggs taken on the Mary River, Queensland, in 1882; while we have Mr. K. Broadbent's own valuable field observations of the Osprey made in Northern Queensland, where the bird finds its most suitable living about the mouths of the rivers, and is prevalent at Cardwell, where it breeds during the month of June. He once saw one of these birds capture a fish weighing about five pounds, lift it from the water, and fly away with ease.

Though Gould himself shot an Osprey in Recherche Bay, Tasmania, the bird is not usually found so far south, preferring more the tropical and sub-tropical coastal line. However, I possess a splendid set of three eggs (remarkable for their light ground-colour and dark blotches on the apex) taken on Kangaroo Island (S.A.) by Mr. White, just recently (August 1899).

Breeding season extends from June to November.

Sub-order—Striges: Owls.

FAMILY—BUBONIDÆ: OWLS PROPER.

SUB-FAMILY—BUBONINÆ.

30.—Ninox BOOBOOK, Latham.—(35 and 36) *N. marmoratus*, Gould.

BOOBOOK OWL.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 32.

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 168.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 75 (1865); North: Austr. Mus. Cat., p. 25, pl. 6, fig. 6 (1889).

Geographical Distribution.—Australia and Tasmania (?), also Lord Howe Island.

Nest.—Usually a hollow spout or limb of a tree, dead or living, the eggs being deposited on the decayed wood-dust within.

Eggs.—Clutch, three, occasionally four; nearly round, compressed slightly at one end; texture somewhat coarse, with a few limy excrescences on the surface which is slightly glossy and very minutely pitted; colour, white. Dimensions in inches of a proper clutch: (1) 1.79 × 1.45, (2) 1.72 × 1.43, (3) 1.71 × 1.45.

Observations.—The Boobook Owl is a rusty-coloured bird irregularly blotched with white. This nocturnal creature is undoubtedly the most

common Owl in Australia, having been recorded from every district, and go where you will amongst timber you are almost sure to hear its familiar "mo-poke," or, as the aboriginals more correctly imitate the bird's call, "boo-book," or "buck-buck." I have heard it in the Dandenongs commence to call usually about three-quarters of an hour after sunset.

Great has been the controversy whether this Owl or the Tawny-shouldered Frogmouth (*Podargus*) is in reality called the "Mo-poke." As far as I am concerned, it was settled long ago. One night we heard the unmistakable call repeatedly from a tall tree. Stealing up quietly, and having located the exact spot of the sound, a shot from one of our guns brought down a Boobook Owl. Moreover, in later years, during some of the pleasant camp-outs of a few enthusiastic field naturalists, we had additional proof as to the Owl calling "mo-poke." One of our members, who seemed possessed of a phenomenal throat, could imitate to the very sound the Boobook Owl, and when he could catch the bird's ear in the forest, by imitating it could always bring a bird into the tree overhead. I remember on one occasion we had a new member out with us who was anxious to procure a skin of the Owl. During the evening, our friend with the phenomenal throat got behind a tree at the rear of our tent and cleverly produced the Owl's call. "Great Scot!" said our new member, "a Boobook!" and seizing his gun rushed out of the tent. He continued to gaze up the tree where the supposed Owl was, till shouts of derisive laughter caused him to return.

On the morning of the 11th of October, 1890, three of us were hastening over the she-oak (*Casuarina*) clad hills near Myrning, on the Upper Werribee, Victoria, when one of us casually threw a stone against a gaunt, dead gum-tree. Out flew a Boobook Owl from a hollow-spouted limb. Then followed expeditiously the natural sequence—a climb, the chopping of a hole in the tough weather-beaten limb, and a clutch of three eggs is added to our collection. The situation of the eggs was about fifteen feet from the ground.

The original eggs Gould described were taken on the 8th November, by his useful aboriginal companion, "Natty." The specimens were in a forward state of incubation. Mr. Wm. White (Adelaide), on two occasions on Kangaroo Island took four eggs of the Boobook Owl from deserted Ravens' nests. A curious place indeed for an Owl to deposit her eggs.

The Boobook Owl can fly by day as well as by night; but it is not generally known that it sometimes takes its prey by day—at all events, in the subdued daylight of a thick forest. On one occasion Mr. G. A. Keartland, about two o'clock in the afternoon, in the Dandenongs, shot a Boobook in the act of devouring something which proved to be a freshly-captured Pilot Bird (*Pycnoptilus*).

The usual breeding months are October, November, and December.

The illustration, "Robbing a Boobook Owl's Nest," depicts Mr. Tom Brittlebank "riding" his favourite hobby.



TAKING A BOOBOOK OWL'S NEST

From a Photo by the Author.

31.—*Ninox boobook* (sub-species) *ocellata*.
Hombron and Jacquinot.

MARBLED OWL.

Reference—Cat. Birds Brit. Mus., vol. ii, p. 170.

Geographical Distribution.—West and North-west Australia, Northern Territory and Queensland.

Nest and Eggs.—Undescribed.

Observations.—Gould's *N. marmoratus* is merely a fully-adult male of the ordinary Boobook Owl, while *N. ocellata* has been judged a sub-species of the same bird (*i.e.*, the Boobook), from which it may be distinguished by its smaller size and by the more rufous colouring of its plumage.

Mr. Keartland states:—Whilst collecting near the Fitzroy River (north-west) his blackboy noticed a pair of Marbled Owls perched just overhead. They gazed vacantly whilst the blackboy climbed to secure a Honey Eater's Nest, and on his descending the tree Mr. Keartland shot one owl, the other escaping before he could reload. These birds seemed to compress their feathers so as to make themselves appear remarkably small.

32.—*Ninox lurida*. De Vis.

LURID OWL.

Reference—Rept. Sci. Exped. N.E. Queensland, p. 31 (1889).

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—The type specimen of this northern Owl was procured by Mr. Kendall Broadbent in the scrub about four miles out from Cardwell. It is also found in the mountains up the Herbert River. As the sub-species, *ocellata*, appears to represent the Boobook in the north-west, so the *lurida* does in the scrubs of the north-east. Its red or rufous-coloured plumage is the richest of the three, hence the good vernacular name, Lurid Owl. It is likewise the smallest of the three kinds.

33.—*Ninox maculata*, Vigors and Horsfield.—(37)

SPOTTED OWL.

Figure.—Gould: Birds of Australia, fol. vol. i., pl. 33

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 174.

Previous Descriptions of Eggs.—Campbell: Victorian Naturalist (1889); North: Austr. Mus. Cat., app. (1890).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia and Tasmania, including King Island.

Nest.—A hole or hollow-spouted limb of a tree. Sometimes a few leaves are in the nesting-place, which is re-used twice in a season if necessary.

Eggs.—Clutch, two to three; roundish-oval or nearly round, with either end alike in shape; texture comparatively fine, with here and there a small limy excrescence; surface slightly glossy; colour, white. Dimensions in inches: 1.6×1.36 .

Observations.—The principal habitat of this, the smallest of Australian Owls, is Tasmania, and some of the intermediate islands in Bass Strait, but it is also found on the mainland. A specimen of the bird in beautiful condition was procured on King Island by imitating the night cry, which caused it to come into a tree near our camp, and so meet its doom in the interests of science. The call notes of the Spotted Owl are almost identical with the familiar "mo-poke" of the Boobook Owl. I doubt if the real Boobook is found in Tasmania.

I learn from Mr. A. E. Brent, who has taken many nests of the Spotted Owl in Tasmania, that a clutch is usually two eggs, which are deposited in a hollow tree, generally about the first week in November. Eggs have also been found at Christmas, probably a second clutch, because the birds have been known to rear two broods in the year, or laid by some bird whose eggs had been taken earlier in the season. The same nesting-hollow is often resorted to season after season, and probably occupied by the same pair of Owls. A curious fact worth recording is the method whereby these little Owls store dead mice about their nesting-hollow, sticking them between the splinters, and into cracks of the wood. When food is abundant, some of the little carcasses are left there to dry up like miniature mummies.

Breeding months October to December.

34.—NINOX CONNIVENS, Latham.—(34)

WINKING OWL.

Figure—Gould: Birds of Australia, fol., vol. i., pl. 34.

Reference.—Cat Birds Brit. Mus., vol. ii., p. 175.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 71, (1865); North: Records Austr. Mus., vol. i. (1891).

Geographical Distribution.—Australia, except the north-west.

Nest.—A hole in the trunk of a tree, or hollow-spouted limb. The old nesting-place is frequently re-used.

Eggs.—Clutch, two to three; almost round in form; texture of shell somewhat coarse; surface glossy, with occasionally here and there little nodules of lime; colour, pure white. Dimensions in inches of a proper clutch: (1) 1.86×1.62 , (2) 1.82×1.56 , (3) 1.79×1.59 .

Observations.—This species is one of our common Owls, being found across the Continent from east to west. The prevailing colour is mottled greyish-brown and white. The large, staring eyes are bright yellow, which blink at you in the daylight, hence the name signifying winking, or conniving (*connivens*). It is a good-sized bird, being in total length between 16 inches and 17 inches; wing, $11\frac{1}{2}$ inches; tail, 7 inches. The expanse of one measured between the tips of the wings gave $38\frac{1}{2}$ inches.

The only Australian Owls' eggs known in Gould's day were those of the Boobook, procured by himself, and of the Winking Owl taken by Gilbert in Western Australia.

Mr. North says:—"Although the present species is widely distributed over the Australian Continent, but little knowledge has been gained of its nidification and eggs, and it is due to the exertions of Mr. George Barnard and his sons, of Duaringa, Queensland, that I am enabled to give a description of this rare egg, taken at Coomooboolaroo, during September, 1886. The nesting place was in a eucalyptus, the entrance of which was through the end of a small hollow spout opening into the main trunk of the tree; here Mr. Barnard's sons made an aperture with an axe, and the eggs, two in number, were found deposited on the decayed wood near the bottom of the tree. Last year (1890), three more eggs of the same species were taken from this tree, in both instances being perfectly fresh."

When in the field with Mr. Harry Barnard, October, 1885, we flushed a Winking Owl from a large hollow tree. Instead of eggs we were disappointed to find three young birds that nestled amongst bones, fur and filth, at the bottom of the hole.

35.—*Ninox connivens* (sub-species) *peninsularis*, Salvadori.

CAPE YORK OWL.

Reference.—Ann. Mus. Civ. Gen., vol. vii., p. 992 (1875).

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—Little or nothing is known of the habits of this northern variety of the Winking Owl. I saw a skin of a fine specimen that was collected at Cape York by Mr. Harry Barnard.

36.—*Ninox connivens* (sub-species) *occidentalis*, Ramsay.

WESTERN WINKING OWL.

Reference.—Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1086.

Geographical Distribution.—North-west Australia.

Nest and Eggs.—Undescribed.

Observations.—The Western Winking Owl may be considered the north-western and closely-allied representative of the ordinary Winking Owl. Mr. Tom Carter shot a pair of Winking Owls near Point Cloates, which had *dark-brown* eyes, instead of *bright-yellow*, as in the eastern birds. These birds may have been the sub-species, *occidentalis*. Mr. North remarks that *occidentalis* may be distinguished from the true *connivens* by the pale rufous-brown stripe down the centre of each feather of the under surface.

Although nocturnal in their habits, in the north-west, Mr. Keartland found these birds were capable of keeping a sharp lookout in the brightest sunshine. On disturbing a pair near the Fitzroy River he shot the female. Her mate flew off, pursued by several Friar Birds, Magpie Larks, Red-throated Honey Eaters, Kingfishers and Wood Swallows; but although its attention was somewhat absorbed in repelling their attacks, Mr. Keartland had great difficulty in securing the bird after a chase of nearly a mile. These Owls were numerous along the course of the Nerrima and Jilgelly Creeks, where they frequent the dense bushes near the water-holes, and feed on the small animals, birds, and reptiles which come to drink in the evening.

37.—*Ninox strenua*, Gould. —(32 and 33)
N. rufa, Gould.

POWERFUL OWL.

Figure.—Gould: Birds of Australia, fol., vol. i., pls 35 and 36.

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 178.

Geographical Distribution.—Northern Territory, Queensland, New South Wales, Victoria, and South Australia (?).

Nest.—The usual hollow of a tree or spouted limb, in heavy forest.

Eggs.—Clutch, three probably; an example in the Adelaide Museum, reputed to be of the northern variety (*N. rufa*), has the usual Owl characteristics, and measures in inches 2.06 × 1.75.

Observations.—The description above given is taken from an egg in the Adelaide Museum; there were no data with it, except the name, "*Spiloglaux rufus*," which species I think is now accepted as identical with *N. strenua*, notwithstanding that Gould figured both birds separately. From the size and appearance of the egg in question, I judged its parentage to be correct. However, we shall welcome any information giving a description of a complete set.

The Powerful Owl is, with the exception of the Wedge-tailed Eagle and the Sea Eagle, the most powerful bird of prey in Australia. It is said to be able to carry a so-called native bear, or koala. The plumage is of dark-grey, mottled, and it has large yellow-irised eyes; feet also yellow. Total length, 24 inches; wing, 15 inches; tail, 10½ inches.

The last Powerful Owl I had an opportunity of examining in the flesh was shot by Mr. A. W. Milligan at one of our camp-outs near Lilydale. The birds are frequently met with in the ranges thereabouts, and have been known to "pick-off" Lyre Birds roosting at night on the tall white gums. The sudden hideous scream of this great Owl is very alarming, especially when, flying swiftly through the forest, it breaks the midnight silence. Even sturdy bushmen quail, while aborigines dread it as an evil spirit; but to the naturalist the scream is sweet music, albeit but rude and weird.

With reference to the two varieties of the Powerful Owl, Mr. Kendall Broadbent, in his most interesting article, "Cardwell Birds," writes:—"The Great Scrub Owl (*N. strenua*) may also be expected to occur in the Cardwell scrubs, but rarely so. It has been shot by me at Freshwater Creek, near Cairns, and seen commonly in the Brisbane scrub and in Gippsland. The Rufous Owl (*N. rufa*) is essentially a frequenter of mountainous country, being shot by me in the high land at the back of Cardwell. It seems always to occur in dense scrubby gullies, and to live habitually in pairs."

Mr. Broadbent mentions that the call-note of the Powerful Owl is a deeper and more voluminous "more-pork" than that called by the Boobook Owl. He ascertained this from a pair that frequented the neighbourhood of his camp at Chinchilla (Queensland). Mr. De Lany (Gippsland) substantiates the fact, saying the call is "much more drawn out and mournful."

38.—*Ninox humeralis*, Hombroen and Jacquinot.

RUFOUS OWL.

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 180.

Geographical Distribution.—North Queensland, also New Guinea.

Nest and Eggs.—Undescribed.

Observations.—Mr. A. J. North remarks*:—"It was in the appendix to the 'Annual Report on British New Guinea, for 1894,' that Mr. De Vis, Curator of the Queensland Museum, first drew attention to the existence of this species in Australia, and he there states his belief that it is identical with *N. rufa* of Gould. Mr. De Vis has kindly sent me for examination a specimen obtained in the scrubs of North-eastern Queensland. It is a male, and is labelled, 'Herbert Gorge, October, 1886.' This specimen cannot be distinguished from typical examples of *N. humeralis*, obtained in New Guinea. In all the specimens examined belonging to this species, the ear coverts are black and the tail feathers crossed with eight pale bars."

* Catalogue of the Australian Birds in the Australian Museum, Part ii. (Striges).

FAMILY—STRIGIDÆ: BARN OWLS.

39.—*STRIX NOVÆ HOLLANDIÆ*, Stephens.—(29)

MASKED OWL.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 29

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 303.

Geographical Distribution.—Australia in general.

Nest.—Judging by analogy, some hole within a giant eucalypt or crevice in cliff or rock.

Eggs.—Undescribed.

Observations.—This fine large Owl ranges over the whole of Australia in localities conducive to its habits, such as forests of giant timber, or wild rocky peaks of mountains. From these fastnesses it sallies forth at night on noiseless pinions over the lowlands in search of its prey, which consists chiefly of small animals (? rodents). The somewhat larger and darker variety peculiar to Tasmania and some parts of the mainland opposite, which on account of the deep-chestnut facial discs has received the name Chestnut-faced Owl (*S. castanops*), is regarded by modern authorities as identical with Masked Owl. Gould has figured both. However, the eggs of either form are still unknown to science. Mr. Tom Carter nearly scored a notch on the tree of oological fame. When twenty-five miles inland from Point Cloates (W.A.), on 1st October, 1892, he caught, in a hollow tree (*Eucalypt*) a Masked Owl, but failed to secure the eggs, having no axe or tomahawk to cut them out.

In general colour the Masked Owl is pale-buff, variegated on the upper surface with dark-brown, and sparingly dotted with white; the under surface is paler, with a few brown spots. The large facial discs, which impart to the bird such an odd appearance, are purplish, margined with dark-brown spots and centred with dark liquid eyes; bill, pale horn-colour, and feet yellowish. Total length, 14 inches; wing, 13½ inches; tail, 7½ inches.

40.—*STRIX NOVÆ HOLLANDIÆ* (sub-species) *CASTANOPS*, Gould.—(28)

CHESTNUT-FACED OWL.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 28.

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 304.

Geographical Distribution.—New South Wales, Victoria, South Australia, and Tasmania.

Nest and Eggs.—Undescribed.

Observations.—It is questionable whether or not the Chestnut-faced Owl is not restricted to Tasmania only, where, in a more powerful and darker coloured species, it represents the Masked Owl of the mainland.

Mr. A. E. Brent tells me that a pair of Chestnut-faced Owls used to breed in one of the deep, dark gullies of Mount Franklin (?). Several seasons, about the New Year, he noticed fully-fledged young always perched in a particular part of the scrub.

The eggs of this splendid Owl, or the more Continental variety, would be a great acquisition to some of our oological collections. All Australian Owls' eggs are scarce, and I am sadly disappointed that my chapter of these interesting birds is so weak by reason of the eggs of many of the species being still "undescribed."

By way of a reminder to those persons whose superstitions prompt them to kill Owls wherever they appear, I should like to mention that all these birds, as useful vermin destroyers, are perpetually protected in Victoria, and partially in Queensland and South Australia. It is to be hoped that the other States will shortly follow suit in this direction, if only to keep in check the periodical plagues of mice which overrun the country.

41.—*STRIX FLAMMEA* (sub-species) *DELICATULA*, Gould.—(31)

LESSER MASKED OWL.

Figure.—Gould: Birds of Australia, fol., vol. i., pl. 31.

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 297.

Previous Description of Eggs.—North: Austn. Mus. Cat., p. 24 (1889).

Geographical Distribution.—Whole of Australia, also New Guinea.

Nest.—On the wood-dust within a hole or hollow spouted limb of a tree, usually near a water-course.

Eggs.—Clutch, three to six; oval in shape; texture coarse; surface faint trace of gloss and finely pitted; colour, white. Dimensions in inches of odd examples: (1) 1.63 × 1.23, (2) 1.73 × 1.21.

Observations.—This beautiful and delicately-coloured Owl is widely distributed over the whole of Australia, and may be often heard at night "hooting" from the entrance of the hole in some large gum-tree bordering a river. I fancy they remain within the hollows during the daytime. A specimen was seen roosting among the rocks at the Werribee Gorge.

It would need much time to accurately describe its beautiful plumage; but it suffices to say generally that its coat is a light greyish-brown tinged with yellow, delicately pencilled with spots of brownish-black and white; the under parts are white, sparingly marked with brownish dots. The facial discs are also white, margined with buff. Length, 14 inches; wing, 11 inches; tail, 4 inches.

The eggs of the Delicate Owl in my collection were presented to me by Dr. W. Macgillivray, and were procured on his father's station in the

Gulf of Carpentaria district, where the birds usually deposit their eggs within a hole of a flooded box or coolibar (*Eucalyptus microtheca?*) that grows along the streams.

Mr. North states:—"On two occasions Mr. K. H. Bennett found nests of this species at Ivanhoe, in the interior of New South Wales. The eggs were in both instances six in number, of a dull uniform white, and were deposited on the decayed wood in the hollow limb of a box tree."

Mr. Price Fletcher, in the course of his peregrinations through the north-west interior of Queensland, observed that this bird lays two eggs in September and October, and again in January and February.

Regarding the Lesser Masked Owl in its western habitat, Mr. G. A. Keartland writes:—"These beautiful birds were met with in the Mulga scrubs east of Lake Way, where they presented a most grotesque appearance as they gazed at the passing caravan. At the Camel dépôt several more were noted, and specimens obtained. These birds were all perched among the foliage of the trees. Whilst shooting at one of the creeks passed, Mr. C. F. Wells disturbed a pair from the hollow spout of a eucalypt, and on another occasion, at the Fitzroy River, I had sent a native to examine a hollow branch, when another pair flew out, striking him in the face with their wings as they escaped."

42 —STRIX TENEBRICOZA, Gould.—(30)

SOOTY OWL.

Figure.—Gould: Birds of Australia, fol., vol. i, pl. 30.

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 306.

Previous Description of Eggs.—Campbell: Victorian Naturalist (1889).

Geographical Distribution.—Queensland, New South Wales, and Victoria, also New Guinea.

Nest.—A hollow-spouted limb of a tree in heavy forest.

Eggs.—Clutch, three; nearly round in form; texture somewhat coarse; surface without gloss and minutely pitted; colour, pure white. Dimensions in inches: 1.83 × 1.61.

Observations.—This is a beautiful compact creature in general sooty or brownish-black plumage, ornamented with a spot of white near the tip of each feather; the eyes are dark-brown, surrounded with facial discs of sooty grey; bill and feet are the same colour as in the Masked Owl. Total length, 13 to 15 inches; wing, 11½ inches; tail, 5 inches.

I have shot this fine dusky-coloured Owl on the forested shores of Lake King, Gippsland. I have also seen it procured in the Dandenongs, near Melbourne. It ranges along the eastern timber tracts to the northern scrubs, where my friend, Mr. Le Souéf, procured an example on the Bloomfield River. However, Mr. Broadbent considers the Sooty Owl a rare bird in the northern scrubs, compared with the forests of Gippsland.

Whilst camped on the Tully River, Northern Queensland, he received a fine specimen of this Owl that was caught in a rat-trap.

The egg of this species, which I have described, was taken at Pimpana, South Queensland, by Mr. W. T. Bailey, who sent one of the parent birds to Mr. A. Coles, our skilful taxidermist.

43.—*STRIX CANDIDA*, Tickell.

GRASS OWL.

Figure.—Gould: Birds of Australia, fol., supp. vi., pl. 1.

Reference.—Cat. Birds Brit. Mus., vol. ii., p. 308.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1142 (1886); Hume; Nests and Eggs Indian Birds (Oates' ed.), vol. iii., p. 95 (1890). North: Austrn. Mus. Cat. pl. 6, fig. 5 (1889), Records Austrn. Mus., vol. ii., p. 13 (1892).

Geographical Distribution.—Queensland, New South Wales, and Victoria; also Philippine Islands, Formosa, India and Indo-China.

Nest.—A bare hollow upon the ground, usually under tussock-grass.

Eggs.—Clutch, four; thick oval in form; colour, white; the shell, with the exception of a few calcareous excrescences at the larger end, being perfectly smooth and lustreless. Dimensions in inches (1) 1.69 × 1.27, (2) 1.73 × 1.26.

Observations.—This is a remarkable Owl, abiding under tussock-grass by day, where specimens are frequently speared by aborigines. At first sight it is not unlike the Delicate Owl in colour and markings, but possesses much longer legs, which are an indication of its ground habits.

The Grass Owl enjoys an extensive habitat, ranging from Australia right through suitable parts to South-eastern Asia. In times of drought it has been known to visit Victoria. The first specimen brought under my notice was by Mr. A. Coles, taxidermist, Elizabeth Street, Melbourne. The rare specimen was promptly secured by the National Museum. Another example is in the Geelong Museum, taken at Point Henry, 1884.

Dr. Ramsay, who first described the eggs of the Grass Owl from the Australian region, was indebted to his friend, Mr. J. A. Boyd, for a set taken in the Herbert District, Queensland. Mr. North, in re-describing eggs from the same gentleman, gives the following valuable notes by Mr. Boyd relative to the nidification of the species:—"This Owl nests on the ground, choosing a high thick tussock of grass, forming a bower in it, and laying its eggs on the few grass blades that have been trampled down. On the 1st June, 1884, I found two nests of this bird, each of which contained three young ones and one egg. It is a curious fact that, though this bird always lays four eggs, I never found more than three young ones, one egg being always added. When first I came here these birds were comparatively common, but latterly have almost disappeared from this immediate neighbourhood, owing, I think, to the largely increased quantity of cattle running over the plain."

ORDER—PASSERIFORMES: PERCHING BIRDS.

Sub-Order—Passeres.

FAMILY—CORVIDÆ: CROWS.

SUB-FAMILY—CORVINÆ: CROWS PROPER.

44—CORVUS CORONOIDES, Vigors and Horsfield.

CROW.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 20.

Previous Descriptions of Eggs.—Gould; Birds of Australia (1848), also Handbook, vol. i., p. 476 (1865); Ramsay; Ibis, p. 303 (1865); North; Austr. Mus. Cat. p. 186, pl. 7, fig. 8 (1889).

Geographical Distribution.—Whole of Australia and Tasmania.

Nest.—Similar in construction to that of the Raven; generally placed in a tree, but sometimes on a bush in interior where timber is scarce.

Eggs.—Clutch, four to five, occasionally six; except for their smaller and rounder size are hardly to be distinguished from those of the Raven. Dimensions in inches of a clutch from Queensland, accompanied by neck feathers of the bird: (1) 1.5 × 1.13, (2) 1.49 × 1.14, (3) 1.46 × 1.1, (4) 1.45 × 1.13.

Observations.—There still exists some uncertainty about identifying or separating our two species of Crows, or the Crow from the Raven. But if the chief points, as first mentioned by Dr. Ramsay as far back as 1865, and afterwards described by Dr. Sharpe, be remembered, the difficulties of identification vanish. The Raven (*Corone australis*) is the larger bird, has eyes white in the adult, and wears conspicuous long feathers on its throat, and has the base of the feathers on the hind part of its neck and back of a *dusky-brown* or *sooty* colour; while the true Crow (*Corvus coronoides*) has white eyes likewise, but the base of the feathers is *snow-white*.

To attempt to identify the birds by the colour of their eyes, separating them by the name of Hazel-eyed and White-eyed Crow, is likely to lead

to error, since it is stated that both species have been found at times with white eyes. The only and sure method is by handling the birds and deciding by the colouration of the base of the feathers on the neck and back.

Although the Crow appears to enjoy a similar range of habitat to the Raven, the Crow is probably the more northern and western bird. I have received skins or feathers from various parts of the Continent and Tasmania. They have all pertained to Ravens, except those from near the Tropics, which were Crows. I examined several skins in the Hobart Museum; also all Ravens. Sample heads from Mr. Tom Carter, North-west Cape, were those of Crows, and were accompanied by the statement that the white-eyed birds had inside of mouth and tongue *blue black*, while those with brown eyes had the mouth pink. Probably the latter were youthful birds.

Mr. Wheelwright, in his "Bush Wanderings," wrote:—"We had another species, rather smaller than the Carrion Crow, which it otherwise much resembled in shape, plumage and habits, but the eye was clear bluish-white. We called it the White-eyed Crow. It was rather a more local bird, generally seen in pairs, occasionally joining the other, but was nowhere very common with us."

45.—CORONE AUSTRALIS, Gould.—(290)

RAVEN.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 18.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 37.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); North: Austr. Mus. Cat., p. 187, pl. 7, fig. 7 (1889).

Geographical Distribution.—Whole of Australia and Tasmania.

Nest.—Open, large, somewhat deep; composed of sticks and coarse twigs; lined inside with strings of bark, grass, wool, &c. Usually situated in the upper forked branches of a tall tree. Where birds are numerous, they occasionally nest in companies. Dimensions over all, about 18 inches by 12 inches in depth; egg cavity, 7 inches across by 4 inches deep.

Eggs.—Clutch, four to five, occasionally six; oval or pointed oval in shape; texture comparatively fine; surface glossy; colour, pale-green, spotted, blotched or smudged with dark-umber or olive. Dimensions in inches of a clutch: (1) 1.7 × 1.21, (2) 1.68 × 1.2, (3) 1.58 × 1.24, (4) 1.57 × 1.16. (Plate 5.)

Observations.—The White-eyed Crow, or really Raven, is ubiquitous as far as Australia and Tasmania are concerned, but it is more abundant in the plains of the interior, where the birds congregate in great numbers.

On the Penguin Rocks, not far from Albatross Island, in Bass Strait, Mr. Dudley Le Souëf found a Raven's nest on 2nd December (1894), built on a ledge of rock, which contained two young just ready to fly. Mr. Le Souëf suggested that the absence of trees evidently made the birds choose this curious nesting-place.

Near the coast and in heavy forest country their nests are solitary, but in belts of the more open timber inland the Ravens nest in companies. Such places I had an opportunity of visiting in the Pyramid Hill district of Victoria during October, 1884. The nests were in adjacent box-trees, sometimes several nests in one tree. The majority of the nests were occupied with young. Kestrels were using some of the Ravens' old nests. In one instance we took Ravens and Kestrels' eggs from nests situated in the same tree. I am not positive whether the Ravens use their old nests or rebuild fresh ones every season, but from observations I should say they do both, as the case may be. There is a very heavy and nauseous odour about Ravens' nests containing young.

The Ravens are known to remain on the Werribee Park Estate all the year round. Messrs. Keartland and Gabriel have paid several visits, notably on the 9th September, 1893, which are recorded in the "Victorian Naturalist" of that year. Although early in the season, they found several broods of young nearly all able to fly, and from the evidence before them concluded the eggs had been laid in July. The young had blue eyes. In other nests eggs were found in clutches varying from two (probably unfinished sets) to five in number.

On one occasion, when nesting at the Werribee, we found two Ravens' nests in adjacent trees containing each one abnormally small egg in the set of four. We thought it strange there should have been two "arrests of development" so close together.

I possess two records supplied by friends who have observed a Crow's or Raven's nest built into the dried-up carcass of a sheep. We are aware that these birds particularly relish insects with a strong or pungent odour. Possibly that may account for the *strong* situation selected by these two birds for a nesting-home.

The White-face (*Xerophila*) has been known to attach its nest to a Raven's nest in use. But the Kestrel and Black Duck, when in need, will use old or deserted ones.

Gould speaks of Crows as appearing singly or in pairs, or occasionally congregating in small flocks. The opening up of settlement and pastoral pursuits has evidently induced these "black scavengers" to assemble and concentrate their forces in greater numbers nowadays.

On the Yorke Peninsula, S.A., Mr. J. G. McDougall notes that the Ravens lay as early as July 21st. In Tasmania, the late Mr. F. H. Reed found Ravens' nests occasionally containing six eggs. In the same State Mr. A. E. Brent says the nests are usually lined with horse manure, which the bird carries and pulls to pieces in the nest.

In Mr. Hermann Lau's South Queensland notes I find:—"Crow lays four to five eggs, in a nest better lined than that of a Hawk, mixing fur up with horsehair and other materials. Its nest is rarely found here, and in most cases is inaccessible. The male is very black and possesses white eyes, while the female is more sombre in colour. I have frequently seen Crows feeding the young of the Channel Bill or Great Cuckoo (*Scythrops*)."

Breeding months July to December, and occasionally autumn.

Mr. A. W. Milligan, formerly of Traralgon, Gippsland, where he kept

White-eyed Crows or Ravens in confinement, kindly sent me the following interesting communication:—"As a pet bird I regard our White-eyed Crow as the most interesting and entertaining of all. He is possessed of keen intelligence, is easily domesticated, and affectionate. Veritably he is the 'nigger minstrel' of bird-life, not only in his shining black dress, but in his droll attitudes, unlimited 'patter,' and the facility with which he shows the 'whites' of his eyes.

"One old favourite, bearing the name of 'Corbeau,' which I had for many years, was a past-master. In the early summer mornings, after a hearty meal and his morning bath (in respect of which he was very punctilious), he would commence his buffooneries. His actions, gestures, and voice were indescribably comical.

"Stretching out his neck horizontally to its utmost length, and erecting neck and head feathers, he would cause his uncanny white eyes to assume the most imbecile expression, at the same time uttering a long-sustained 'ka-a-a,' commencing in a deep sonorous key and ending in a piping, tremulous treble. With suddenness he would throw himself on his back, and whilst in that position and with his claws in motion would fight an imaginary foe, at the same time changing his notes to one of anger and defiance. Pose after pose and antic after antic followed. These performances would last an hour without intermission, two brothers in captivity perched high stolidly watching without attempting to join in. They seemed to consider it to be their duty to play the part of spectators, while 'Corbeau' acted as entertainer. 'Corbeau's' end was untimely, he being found one morning with his head fixed in and hanging from the mesh covering the roof of his house.

"When he was first brought to me (not much more than a fledgeling) his eyes were 'loyal' brown in colour, but on his entering his second year they changed to china-white, an evidence, I should think, of his attaining adolescence.

"People contemptuously and slanderously speak of the White-eyed Crow as the Carrion Crow. If he feed on carrion it can only be under stress of circumstances. In captivity he exhibits a decided liking for figs, apples, pears, tomatoes, &c., as also the pink berries of the pepper-tree. He eats meat readily, but it must be fresh; in summer-time he will be inclined to leave it for fruit.

"In the wild state, the White-eyed Crow evidently believes in a varied diet. Last Easter, whilst on a visit to Snake Island and the Port Albert channels and Corner Inlet, I saw scores of White-eyed Crows consorting with the Oyster Catchers, Sea Curlews, and Sandpipers, and feeding on the marine life left on the sandy shallows and mud-banks."

Under the heading, "A Crow Camp," the following note, written by Mr. Albert Le Souëf, appeared in *The Australasian*, 6th June, 1896:—"Many years ago I was travelling with a blackfellow across the Snowy Mountains or Australian Alps on my way from a cattle-station I then owned near Twofold Bay to Victoria. It may not be generally known that on the top of the mountains there is an extensive table-land or rolling downs, covered with thick grass, and watered by beautiful pebbly creeks, the heads of the several rivers which water the low country, the

extreme summits of the range being an elevated ridge of rocky peaks about the centre of the plateau, which at the point where I crossed it was some forty miles in width. I encamped one night under the shadow of one of these peaks, and not far from Kosciusko. It was early in the month of February, but even then masses of frozen snow were clinging to the shady and sheltered side of the rocks. The place where I encamped was covered with dead and stunted gum-trees, killed, no doubt, by some terrible bush fire of former years, and every leafless tree was covered with Crows' nests, thousands of them, and the continuous cawing of the birds was completely deafening. My sable companion and myself were glad when darkness came on and the noisy birds went to sleep, though even during the night they were not quite voiceless, disturbed most likely by the large camp fire we had to keep up on account of the cold. I was much interested in this immense rookery, as I had often looked for Crows' nests in the low country, but could never find any, and I thought some instinct induced them to build on the mountain tops, though I have since heard that rookeries are sometimes found in flat country."

46.—STREPERA GRACULINA, White.—(88)

PIED CROW SHRIKE.

Figure—Gould: Birds of Australia, fol., vol. ii, pl. 42.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 57.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882); North: Austr. Mus. Cat., p. 55 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.

Nest.—Large, open, basin-shaped structure, composed outwardly of sticks and twigs, lined inside with grasses, &c., and usually placed in the forked branches of a tree in forest or scrub. Dimensions over all, about 9 inches by 4 inches in depth; egg cavity, 6 inches across by 2 inches deep.

Eggs.—Clutch, two to three; somewhat lengthened in shape, or oval; texture of shell comparatively fine; surface glossy, in some places irregular; colour, rich, vinaceous-buff, indistinctly blotched with umber and purplish-brown. Dimensions in inches of a pair: (1) 1.70 × 1.15, (2) 1.63 × 1.16.

Observations.—The identification of the various species of *Strepera* or Crow Shrikes is somewhat perplexing to the ornithological student. However, the Pied Crow Shrike is the most northerly one as far as the eastern coast is concerned, although it sometimes ranges round as far as South Australia, where Mr. S. A. White shot a bird at Mount Barker, 1896. Specimen examined. The only nest I recollect seeing of this species was in Richmond River District of New South Wales, where it was situated well out of reach in the forked branches of a tall buoyong tree (*Turrietta actinophylla*), standing in a clearing.

The Pied Crow Shrike is among the foster parents of the Channel Bill (*Scythrops*). Mr. Hermann Lau states: "It was in such a nest that I found, in October, 1879, at Warroo, 70 miles south-west from Yandilla (Q.), two young of the Channel Bill. To get the nest a blackfellow had to chop the branch off." The eggs described above were collected by Mr. Lau, in Queensland.

The call notes of the Pied Crow Shrike sound very much like the words "two and two are four."

Usual breeding months from August to December.

47.—STREPERA ARGUTA, Gould.—(90)

HILL CROW SHRIKE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 44

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 59.

Previous Descriptions of Eggs.—Campbell. Southern Science Record (1882); North: Austr. Mus. Cat., p. 57 (1889).

Geographical Distribution.—Tasmania.

Nest.—Open, outwardly roughly composed of sticks and twigs; lined inwardly with fine twigs, rootlets and grass, and usually situated in the forked branches of a tall tree (*Eucalypt*).

Eggs.—Clutch, three to four; lengthened in form, tapering towards one end; texture of shell fairly fine; surface, although somewhat rough, slightly glossy; colour, light purplish-buff or pale vinaceous brown, blotched all over with light reddish-brown, purplish-brown, and a few markings of amber. Dimensions in inches of odd examples: (1) 1.84 × 1.2, (2) 1.66 × 1.15. (Plate 5.)

Observations.—The Hill Crow Shrike, specifically termed *arguta* by Gould, on account of its loud ringing notes of "clink, clink," several times repeated, strongly reminding him of the distant sound of the strokes on a blacksmith's anvil, is, I believe, peculiarly a Tasmanian form.

With regard to its nidification, Mr. Arthur E. Brent, a local oologist, informs me this finest and largest of the *Strepera* sometimes lays the full complement of four eggs, depositing them in a much rougher-constructed nest than that usually built by its more lowland-loving neighbour, the Sooty Crow Shrike (*S. fuliginosa*).

All the nests Gould found of this species either contained young birds or were without eggs.

I stated in my "Manual" that the eggs of this species were the richest in colouring of all those of the genus. I should have stated they were the palest.

48 — STREPERA CUNEICAUDATA, Vieillot. — (91)
S. anaphonensis, Temm.

GREY CROW SHRIKE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 45.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 60.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 174 (1865); North: Austn. Mus. Cat., p. 56, pl. 7, fig. 1 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria and South Australia.

Nest.—Somewhat large, composed outwardly of sticks and twigs, lined inwardly with a thick ply, principally of grasses, and placed generally in the forked branches of a tall tree. Dimensions over all 13 inches by 6 to 7 inches in depth; egg cavity 7 inches across by 2½ inches deep.

Eggs.—Clutch, three; oval in shape; texture of shell fairly fine; surface, glossy; colour, pale reddish or vinaceous-buff, indistinctly blotched (chiefly) and spotted with light or pale umber and purplish-brown. Dimensions in inches of a proper clutch: (1) 1.75 × 1.18, (2) 1.7 × 1.2, (3) 1.66 × 1.16.

The eggs are probably the next lightest in general colouring to those of the *S. arguta*.

Observations.—The next most northerly species of this peculiar Crow Shrike is the Grey. Its habitat is included from South Queensland round to South Australia. How much further west it extends, or where it intergrades with the Leaden-coloured Crow Shrike (*S. plumbea*), has yet to be ascertained. Gould has amalgamated the two forms, although at first he was inclined to separate them. They have again been separated on the authority of Dr. Sharpe.

Almost every dweller of the forest is acquainted with the peculiar loud double note of the Grey Crow Shrike. The nest of this species I last took was during a South Australian excursion to Kingston. The nest was situated in a casuarina in the coastal scrub, was somewhat shallow, and lined sparingly with tendrils of creeping plants, grass, and rootlets. Dimensions over all, 16 to 18 inches by 10 inches in depth; egg cavity, 6 inches across by 3 inches deep. Clutch, three eggs. Date, 19th September, 1899.

Breeding months commence in August, continuing to October, or later.

49.—STREPERA CUNEICAUDATA (sub-species) PLUMBEA, Gould

LEADEN CROW SHRIKE.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 60.

Previous Descriptions of Eggs.—Campbell: Proc. Roy. Soc. Victoria, vol. iii., p. 1, pl. 1, fig. 7 and 9 (1890).

Geographical Distribution.—West Australia.



NEST OF THE LEADEN CROW SHRIKE

From a Photo by the Author.

Nest.—Open, somewhat large, composed outwardly of tough, dead sticks and twigs, firmly lined inside with grasses, and situated in the forked branches of any suitable tree. Dimensions over all, about 18 inches; inside or egg cavity, 7 inches across by 3 inches deep.

Eggs.—Clutch, three; long oval in shape; texture fairly fine; surface slightly glossy; colour, deep reddish-buff or brownish-red, indistinctly mottled all over with a darker shade of the same colour. Some examples are much lighter in colour, more resembling those of *S. arguta* or *S. curvicaudata*. Dimensions in inches of a pair: (1) 1.89 × 1.18. (2) 1.78 × 1.17; of an odd and somewhat roundish example: 1.67 × 1.2.

Observations.—During my excursions in the forests of Western Australia I enjoyed ample opportunity of observing this bird, or the "Squeaker," as the Colonists there commonly call it. I have been able to approach near enough for me to distinguish the yellow of their large eyes when the birds hopped over the ground, crow-like fashion, as Gilbert remarked, in search of food, which is various, from snakes to cultivated fruit. I am informed they will devour figs wholesale, and think lightly of flying away with their large bill piercing a juicy pear.

The nest above described I took near Hamelin Harbour, 17th October, 1889. It was situated in the forked branches of a peppermint tree (*Agonis*). Fortunately the two eggs were addled, or else I should not have obtained my specimens. From the third egg a naked squab had just been hatched.

The illustration is taken from that nest, which was removed and placed at the base of a blackened stump.

50.—STREPERA MELANOPTERA, Gould.

BLACK-WINGED CROW SHRIKE.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 61.

Previous Descriptions of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. ii., 2nd ser., p. 406 (1887).

Geographical Distribution.—Victoria (?) and South Australia.

Nest.—Similar to those of the other members of the genus.

Eggs.—Clutch, two to three; oval in shape; texture of shell fairly fine; surface glossy; colour, pale purplish-buff or purplish-flesh, moderately blotched, chiefly, and spotted with umber, rufous-brown, and dull purplish-brown. Dimensions in inches of a pair: (1) 1.67 × 1.17, (2) 1.6 × 1.17.

Observations.—*S. melanoptera* or the Black-winged Crow Shrike is the mainland or smaller race of *S. arguta* of Tasmania. Gould, upon second consideration, bunched the two (his own) species. Dr. Sharpe has not only separated them again but split the mainland species into two. However, his remarks are somewhat cautious. He says: "If we consider

the big *S. arguta* of Tasmania to be the typical species of this group of *Strepera*, we find three very closely allied species, whose exact relation, time, and a larger series of specimens are necessary to determine. I have separated the smaller form from Port Lincoln as *S. intermedia*, as well as the South Australian *S. melanoptera*; but whether these both grade into one another or into *S. arguta*, must be proved by the comparison of a larger series."

Writing from Yorke Peninsula, S. Australia, Mr. James G. McDougall states:—"The Black Magpie (*S. melanoptera*) builds a nest hardly distinguishable from that of the Magpie, but somewhat larger. Eggs, two; breeds October. A rather scarce bird with us." Mr. W. White says two eggs predominate as a rule for a sitting, but he has not unfrequently seen three. The pair of eggs I received from him bore the data,—“Kangaroo Island—August 1885.”

I possess a pair of *Strepera*'s eggs, taken near Port Lincoln in the Crawford Range, 28th September, 1890, but whether they are referable to Dr. Sharpe's doubtful species—*intermedia*—I know not. The two eggs, although taken from the same nest, vary from each other. One has the ground-colour vinaceous-buff, blotched and spotted on the larger end with umber and purplish-brown; measurement, 1.68 × 1.2 inches. The other has a decidedly darker ground-colour, marked with reddish and purplish-brown; measurement, 1.58 × 1.2 inches.

Mr. North has also given a description of a reputed single egg of this dubious species, *vide* Proc. Linn. Soc., New South Wales, vol. ii., 2nd ser., p. 405 (1887).

51.—STREPERA FULIGINOSA, Gould.—(89)

SOOTY OR BLACK CROW SHRIKE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 43.

Reference.—Cat. Birds Brit. Mus., vol. iii, p. 61.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 170 (1865); North: Austn. Mus. Cat. p. 57, pl. 7, fig. 2 (1889).

Geographical Distribution.—Victoria and South Australia (?), Tasmania and intermediate islands in Bass Strait.

Nest.—Open, outwardly composed of sticks or coarse twigs, lined compactly inside with fine twigs and rootlets, and usually placed in the forked branches of a tree, high or low. Dimensions over all, 15 or 16 inches by 14 inches in depth; inside or egg cavity, 5½ inches across by 3 inches deep.

Eggs.—Clutch, two to four; lengthened oval in shape or more pointed at one end; texture of shell fairly fine; surface slightly glossy; colour, rich purplish or dark vinaceous-buff, blotched all over (but chiefly on the upper quarter) with large markings of reddish-brown and purplish-brown of various shades. Dimensions in inches of a proper clutch: (1) 1.82 × 1.22, (2) 1.8 × 1.18, (3) 1.73 × 1.22. (Plate 5.)

Observations.—The Sooty or Black Crow Shrike is a very familiar species, especially in Tasmania, and on nearly all the intermediate wooded islands in Bass Strait. Specimens were secured at all expeditions of the Field Naturalists' Club of Victoria to the Strait. Nowhere were the birds found more plentiful than on King Island. They were decidedly fond of visiting the kelpy beaches, where, with peculiar cackle-like cries, they hunted in scores for larvæ and other insects in the heaps of decaying algæ. From the trees in the scrub we took three nests, all containing full set of three eggs, richer and darker in colour than those belonging to any other species of *Strepera*.

These King Island specimens first aroused my suspicions that previous descriptions (including my own) of these eggs were erroneous, and that we had been taking those of *S. arguta* for *S. fuliginosa*, and *vice versa*.

With the kind assistance of Mr. A. E. Brent, I was able to establish that the Sooty Crow Shrike invariably laid the rich purplish-buff or dark vinaceous-coloured eggs, while the light purplish-buff or pale vinaceous-brown undoubtedly belonged to the Hill Crow Shrike (*S. arguta*).

In Tasmania and on King Island, unusually full complements of four eggs for the Sooty Crow Shrike have been found. Some of the nests in the former locality were rendered beautiful by reason of the fine straw-coloured rootlets used by the birds as lining.

Breeding months: August or September to December.

52.—STRUTHIDEA CINEREA, Gould. —(289)

GREY JUMPER.

Figure—Gould: Birds of Australia, fol., vol. iv., pl. 17.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 140.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 473 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 406, pl. 3, figs 4 and 6 (1882); North: Austn. Mus. Cat., pl. 8, fig. 8 (1889). Campbell: Geelong Naturalist, vol. vi., p. 4 (1896).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Bowl-shaped, resembling the better known nest of the Magpie Lark (*Grallina*), but much lighter in structure and more symmetrical in form, built of mud (usually reddish-coloured when dry) bound together with grass and lined inside with fine grass and flowering stalks of same. Usually placed on the horizontal limb of small trees in belts of timber on the interior plains. Dimensions over all, 5 to 6 inches by 3½ inches in depth; egg cavity, 4½ inches across by 2½ inches deep.

Eggs.—Clutch, five to seven, or eight; inclined to oval in shape; texture of shell somewhat coarse, with a perceptible trace of gloss upon the surface; colour, bluish-white, here and there marked with blotches of dark umber and dull purple, some of the markings having the appearance of being laid on with a soft brush. Dimensions in inches of three examples from a full clutch of eight: (1) 1.14 × .8, (2) 1.14 × .86, (3) 1.06 × .81. (Plate 5.)

Observations.—As the distinctive name suggests, the general plumage of this bird is grey, each feather being tipped with a lighter colour; wings, brown; tail, black; while the eyes are pearly white and bill and legs black. Total length, about 12 inches. It is indeed an extraordinary fact that the three mud-nest building birds of Australia, namely the Corcorax, the Struthidea and the Grallina, should be individually isolated or anomalous forms. The nests, however, may be readily distinguished from one another, the Corcorax being much the largest, while the Struthidea is the finer constructed of the two smaller nests.

The Grey Struthidea or Jumper, or, as it is more frequently called, the "Apostle Bird," is associated in family flocks like the Corcorax. It is a dweller in the drier tracts of the great interior provinces. I saw the birds once only in a state of nature. The locality was the Tulla Run, Riverina, (New South Wales). The troop numbered thirteen, threading a pine (*Callitris*) scrub, individuals now and again uttering a harsh note.

Gilbert, Gould's able coadjutor, was the first to discover the nest and eggs of the Struthidea, 19th October, 1844, during Leichhardt's exploring expedition from Moreton Bay to Port Essington.

Again it was reserved for Mr. Hermann Lau to prove that more than one female Struthidea, like the Corcorax, lays in the same nest. He says:—"The Trooper Birds (*Struthidea*), sombre in their garment, and like the Black Magpie (*Corcorax*), form themselves into an assemblage from eight to sixteen, trotting about together while uttering a squealing note. The little chaps go through at least three broods, commencing in Queensland early in September, and finishing up in December. Strict observations led to the result that the whole company attend solely to one nest, which I proved at Warroo, October, 1869. Finding a nest high up on the branch of a Casuarina, I told my black climber not to touch it should it not contain at least five eggs, and when he called out 'only one,' I ordered him down, intending to make further observations. Accordingly after five days I appeared, expecting now six eggs, but to my surprise the nest contained eight!" Clearly then, Mr. Lau has proved in the finding of seven eggs in a nest, after an interval of five days, that more than one female Struthidea lays in the same nest, but it has yet to be ascertained how many lay out of a troop say of twelve or thirteen birds, and if a female lays more than a single egg.

Breeding months, August to December.

SUB-FAMILY—FREGILINE: CHOUGHS.

53.—CORCORAN MELANORHAMPHUS, Vieillot.—(288)

WHITE-WINGED CHOUGH.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 16.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 149.

Previous Descriptions of Eggs.—Gould. Birds of Australia (1848), Hand book, vol. i., p. 471 (1865); North Austr. Mus. Cat., p. 189 (1889); Campbell Geelong Naturalist, vol. vi., p. 3 (1896).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Large, bowl-shaped, composed of coarse cemented mud scantily lined inside with matted stringy-bark, grass, and sometimes with fur and feathers, and conspicuously placed on any convenient horizontal limb of a tree in open forest or belt of timber. (See illustrations.) Dimensions over all of an average nest, $8\frac{1}{2}$ inches by $6\frac{1}{2}$ inches in depth; egg cavity 7 inches across by 3 inches deep.

Eggs.—Clutch, five to seven usually, eight or more occasionally; inclined to be elliptical in shape; texture of shell comparatively strong, with glossy surface; colour, whitish or light yellowish-white, moderately but boldly blotched with irregular-sized patches of olive-brown and dull-slate, the latter colour underlying the surface of the shell. Dimensions in inches of a pair from an incomplete clutch of three taken near Pyramid Hill, Victoria, 6th October, 1884: (1) 1.58×1.11 , (2) 1.53×1.11 ; of a proper clutch of five eggs (seven birds to the family) taken near the Murray, Riverina, 5th November, 1892: (1) 1.64×1.14 , (2) 1.57×1.14 , (3) 1.56×1.14 , (4) 1.51×1.10 , (5) 1.41×1.12 . (Plate 5.)

Observations.—There is much of interest surrounding the Corcorax. Not only is the bird a unique or anomalous kind, but as a common forest species throughout the greater part of Australia, little is understood of its natural habits. Its total length is given at 16 to 19 inches; wing, 10 inches; tail, 9 inches; a somewhat slender bill is $1\frac{3}{4}$ inches, while the black plumage with its glossy-green reflections is set off with scarlet eyes. All our native birds are more or less infested with vermin. Some specimens of the Chough are very repulsive in this respect.

Gould says the Chough occurs in small troops of from six to ten in number. During a recent inland excursion, I was careful to count the individuals of various families, which numbered respectively six, seven, seven, and six. On another occasion I was present at the taking of a nest, when seven birds appeared in a very excited manner. Of course there may be larger flocks when augmented by the season's young. Mr. Chas. McLennan witnessed in the Mallee, one autumn, a large flock of over 100 Choughs. The great naturalist also says, "It has often struck me that more than one female deposits her egg in the same nest, as four or five females may be frequently seen either on the same or neighbouring trees, while only one nest is to be found."

Mr. A. J. North writes, "As many as eight eggs have been taken from one nest. It would appear therefore that more than one bird lays in a single nest. It is well known that often more than one pair of birds assists in the construction of one nest."

However, I think the actual proving of the interesting fact rests with my friend, Mr. Hermann Lau. Let his own words attest. "The Black Magpie (*Corcorax*) is gregarious, living in small troops of from five to fifteen, and is dispersed all over the Downs (Darling). Together they commence building one nest, its material being simply mud mixed with dry grass, and often here and there I have found pebbles the size of a marble embedded. If the soil from which the stuff is taken is black, as on the plainy Downs, the nest shows that colour; on the other hand, if of a loamy character, as at Warroo and vicinity, the colour is lighter. The lining consists in the first-named case of dry grass and in the second mostly of opossum hair, on which five or six eggs rest. The whole company attend to one nest, as I have proved, shooting two birds from the nest, and seeing a third sitting next day. As soon as the young are hatched, another nest gets built, and so on until Christmas (commencing in September), so that three broods may be expected. At Warroo, September, 1879, I sent my black man up a tree to fetch me a nest with the complement of eggs. The nest weighed $7\frac{3}{4}$ lbs."

With regard to the nesting of the Chough, there still remain two important points to be settled:—What is the proportion of male and female birds to one family or nest? and, Do the females lay each one or more eggs?

An exceedingly large nest of this remarkable species taken in the Swan Hill district, 1893, by Mr. Robert Hall, of the Field Naturalists' Club, weighed no less than 9 lbs. 6 ozs.

It may not be generally known that the Chough is, at seasons, a nuisance to farmers. A correspondent in the Mangalore district, Victoria, informs me these birds give some trouble in the newly-sown fields by pulling up grain just as it is germinating.

Breeding months, August to December.

FAMILY—PARADISEIDÆ: BIRDS OF PARADISE.

SUB-FAMILY: EPIMACHINÆ.

54.—PTILORHIS PARADISEA, Swainson.—(363)

RIFLE BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 100.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 154.

Previous Description of Eggs.—Campbell; Victorian Naturalist (1897).

Geographical Distribution.—South Queensland and New South Wales.

Nest.—Somewhat bulky, outwardly constructed chiefly of green stems and fronds of a climbing fern (*Polypodium confluens*), with a few other broad dead leaves at the base, ornamented round the rim with portions of shed skins from the Carpet Snake (*Morelia variegata*), lined inside with wire-like rootlets and a few long, straight portions of twigs. Dimensions over all, 8 inches to 9 inches by 4 inches in depth; egg cavity, 4 inches across by 2 inches deep.



NEST OF THE WHITE-WINGED CHOUGH

Eggs.—Clutch, two; in shape, inclined to oval, but more swollen about the upper quarter; shell, somewhat fine in texture, surface somewhat uneven, *i.e.*, with hair-like cracks or creases, but glossy; colour, rich fleshy tint or pinkish-buff, moderately but boldly marked or streaked longitudinally with reddish-brown and purplish-brown, the markings being more numerous on the apex and upper quarter. Some of the markings have the appearance of being painted on with a fine brush. The egg resembles in general character the smaller egg of the Victoria Rifle Bird, but is richer in the ground colour, with the markings not so elongated. Dimensions in inches, 1.29 × .98. (Plate 6.)

Observations.—*This gorgeously-plumaged bird is the most southern representative of the magnificent Birds of Paradise. Its natural boundaries are the dense sub-tropical scrubs, chiefly the coastal region from the Hunter and Manning Rivers district, New South Wales, to the Maryborough or Wide Bay district, South Queensland. A single bird has been shot behind the Berserker mountains in the Upper Fitzroy district. The opening up of its haunts by civilisation, and the number of birds slain for their intrinsic value, have greatly restricted these boundaries.

My first introduction to this glorious bird occurred under singular circumstances. I was *en route* for the Big Scrub, and between the Clarence and Richmond Rivers we crossed a pine-clad range. The driver of the coach obligingly stopped to enable me to take a photograph at a pretty turn in the road. While taking the picture I heard from the topmost branch of a pine near, extraordinary notes like "yass-yass," and turning, I beheld, perched upon a tree, a Rifle Bird spreading his shining wings and quivering them in the morning sunshine. Fortunately for the beautiful bird, my gun was packed away in its case at the bottom of the coach.

In New South Wales, the first Rifle Bird ever seen was supposed to have been shot by a convict named Wilson, and, having been described by Swainson in 1825, it does seem unaccountable that in such an enterprising State the eggs were not discovered sooner. Mr. F. Strange, in communicating with Gould, merely dropped the hint that the pairing months are November and December, a statement no doubt correct, for, according to the information I could glean from the selectors during my visit to the Big Scrub, Richmond River, the young birds, which are exceedingly clamorous, are first heard about the middle of January, and the old birds lay during December. My visit was early in November, so I was evidently too soon as far as this species was concerned. One person told me he had seen two nests lined entirely with shed skins of snakes—a most incredible assertion I thought at the time.

I brought home a pair of skins from the Big Scrub. My companion shot the male, I bagged the female. The male was in his full nuptial plumage of deep velvety-black, which at certain angles of light was tinged with lilac on the back and on the under parts with lustrous olive-green, while the top of the head and the throat were resplendent with shining shields of metallic green. The aborigines called the bird "Bung-

* Additional observations, see appendix and illustration of nest from photograph by Mr S W Jackson.

bung" (meaning shining or silky). Gould, through an informant, states the native name is "Yass," after the note of the bird, but the name is applied further down by the natives of the Clarence district. You may hear females and young males from different parts of the scrub uttering a prolonged guttural "yass." Young males just commencing to feel "their spurs" repeat the note twice, somewhat hurriedly; but there is no mistaking an old "rooster," with the measured interval between the two notes as if he were taking breath, and so loud are the notes that he may be heard half-a-mile or more away. The Rifle Bird is very local. If you hear one in a particular locality, it is only a matter of time and patience before the bird is yours. By and by you may see him ascending a tree bole after the manner of a Tree Creeper or clinging to a huge "calabash" (staghorn fern) prospecting with large curved bill for insect food.

Two informants reported they saw what appeared to be a nest behind such a place (stag-ferns). One was in a "bean" tree, about fifty feet from the ground, where a pair of birds was going to and fro as if feeding young.

However, here is the story of the first (record) nest. About the middle of the second week in November, 1897, Mr. Isaac Foster, farmer, at Rous, Richmond River district, observed a pair of birds, *i.e.*, both male and female, building. He detected them carrying portions of ferns (*Polypodium*) for nest construction, the remarkable fact being that the male bird appeared immature, not being in entirely black plumage. Mr. Foster reported the interesting news to my friend, Mr. W. T. Bailey, of Cowlong, and an arrangement was made to take the nest on the 19th November, when it was found to contain a single egg.

The nest was built in a thick entanglement of vines, which enveloped the top of a buoyong sapling forty feet high, the umbrageous foliage on top resembling an umbrella on a very long handle. The scrub was dense round about, but the tree in which the nest was built was well exposed, owing to a windfall having broken down the trees near it.

I shall give Mr. Bailey's own account of taking the nest:—"We went on the day appointed, and found the nest to contain *one egg*. We were a little puzzled to know whether to take it or leave it to ascertain the full clutch. But as I lived far from the place, I said 'make sure of No. 1.' Foster climbed the tree, and found there were other two old nests of the same kind, thus proving they must build year after year in the same tree.

"We arranged to allow another ten days to elapse to make sure of any more eggs, but no more were laid. The nest is a fine picture, lined with snake skins, and decorated on the outside with living ferns (a climbing variety). You may be sure I was not happy till I got it in my possession. I sewed the nest all ways with thin twine, so it cannot get out of shape. I think it will make a good photograph."

The nest and egg, which reached me safely through the Parcel Post, were duly described before the Field Naturalists' Club of Victoria. (See illustration, "Nest of the Rifle Bird.")



NEST OF BARK BIRD, CHAWING SNAKE SKIN

55.—PTILORHIS VICTORIE, Gould.—(361)

VICTORIA RIFLE BIRD.

Figure.—Gould Birds of Australia, fol., supp., pl. 50.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 155.

Previous Descriptions of Eggs.—Campbell; Victorian Naturalist (1892);
Le Souéf: Proc. Roy. Soc. Victoria, vol. v., new ser., plate only
(1892); Le Souéf. Proc. Roy. Soc. Victoria, vol. vii., new ser.,
p. 22 (1895).

Geographical Distribution.—North Queensland, including Barnard Islands.

Nest.—Oval in shape, open, shallow; somewhat loosely constructed of tough branching rootlets and a few broad dead leaves and tendrils of climbing plants; lined inside with a layer of broad leaves, upon which are placed portions of very fine twigs. Usually situated in dense scrub. Dimensions over all, 8 inches longest breadth, shortest breadth 6 or 7 inches by $3\frac{1}{2}$ inches in depth; egg cavity, 4 inches across by $1\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, two; blunt or stout oval in shape; texture of shell somewhat fine; surface glossy, with a few crease-like lines running lengthwise; colour of a fleshy tint, streaked in various lengths and breadths longitudinally with rich reddish-brown and purplish-brown. The markings commence near the apex, which is bare or nearly so, extend about half-way down the shell, and assume the appearance of having been painted on (boldly at the top and tapering downwards) with a camel-hair brush. Some of the markings are confluent, and appear as having been painted over each other. In one example, the longest single marking measured .48 inch by a breadth of .09 inch. Dimensions in inches of a proper clutch: (1) $1.24 \times .92$, (2) $1.24 \times .89$.

The type specimen of these beautiful eggs described by me in the "Victorian Naturalist," 1892, figured by Mr. D. Le Souéf in the Proc. Roy. Soc. Viet. the same year, and now in the Australian Museum, has, in addition to the above-mentioned markings, a few small spots near the lower quarter, and one large blotch of rich reddish-brown which has a smudged appearance. Dimensions in inches: $1.23 \times .92$.

Observations.—This, the smallest, but none the less gorgeous of the Rifle Birds or Plumeless Birds of Paradise, is a dweller of the rich tropical scrubs of Northern Queensland, and its habitat is intermediate between the Rifle Bird of New South Wales and Queensland, and the Albert Rifle Bird of Cape York, being a limited strip of country of about 250 miles, extending from the Herbert River scrubs in the south into York Peninsula about the Bloomfield River district in the north.

Macgillivray, when surveying the North-east coast of Australia, discovered the Victoria Rifle Bird on the Barnard Islands and on the adjacent shores of the mainland at Rockingham Bay. On the islands he found three young males fighting, which he bagged with a single charge of dust shot.

Mr. Kendall Broadbent, who is undoubtedly a good "field" authority on our northern scrubs, gives some very interesting details of the Victoria Rifle Bird. He found the bird in the mountainous districts inland from Cardwell even more numerous on the western fall of the range than anywhere else. In its peculiar district it is so common that Mr. Broadbent has seen as many as eight male birds while merely riding along the road through the scrub. The birds attain their full size the second year, but the plumage of the male is not perfect until the third year.

During the months of July, August, and September (which Mr. Broadbent considered were the breeding season) the male bird is continually on the move, flying or hopping, and calling almost incessantly. On this latter account he is most easily obtained at this time of the year. After September, Mr. Broadbent relates, the male is very quiet, a fact that I think would suggest its breeding season had only commenced, which, by the subsequent discovery by other collectors of several nests with eggs, proved to be the case.

The play-grounds and habits of the Victoria Rifle Bird are indeed remarkable, and aid in proving the affinity of Rifle Birds with Bower Birds. Mr. Broadbent proceeds to state:—"Each male bird, as though by mutual agreement, has possession of a fixed domain, possibly some hundreds of yards in extent. In this area he has absolute rule—that is, as far as he can rule—and, if another male should enter on the ground, a fight ensues, the victor remaining in possession.

"A further interesting fact in this connection is the 'play-ground' used by each male bird. In early morning the bird resorts to his play-ground and there sports himself, now spreading his wings and rubbing them against the surface of the play-ground, and then whirling round with wings expanded. This he sometimes keeps up for as long as half-an-hour. No trouble is taken in preparing the ground, as in the case of the Bower Birds with their wonderful bowers. The bird simply selects the broken limb of a dead gum on the border of the scrub, a broken palm, or perhaps a dead stump; but, having chosen this, here he returns at dawn day after day, especially in (? before) the breeding season. Once having seen a bird at play in such a place, it is no difficult matter to obtain it in future; in this way I once procured a specimen which had selected a tree stump for its 'ground,' and at a later date secured a second bird which had seemingly inherited the vacant property."

One of the chief objects of my trip to Queensland in 1885 was to gain, if possible, some information respecting the nidification of this Rifle Bird, which was up to that time a sealed book, or one of Nature's secrets. Although I did not succeed in procuring eggs, I had better give the story of our glorious outing amongst the birds themselves as it appeared in the columns of *The Australasian*, under the title of "A Naturalists' Camp in Northern Queensland," my companions being Messrs. A. and F. Coles, Melbourne, and Mr. A. Gulliver, Townsville:—

"While encamped at Cardwell we determined to see the Rifle Bird in its native element, and, if possible, procure skins, and, as the Rockingham Bay variety was rarest, we were doubly anxious for success. Having failed to observe any of these birds on the mainland, and knowing that they were



NEST OF THE VICTORIA RIFLE BIRD.

From a Photo by the Author

tolerably plentiful on some isolated islands up the coast, we resolved to enlist our friend, Mr. Walsh, sub-collector of Customs, into our services. We had no sooner made known our errand than he replied a trip could be capitally arranged, because he had officially to visit that part of the coast, and could go with us in the pilot cutter. It was a delightful morning as we left the camp behind and briskly 'pegged out' for town, where we arrived at half-past eight o'clock. The tide was unfavourable, and we did not get aboard till two hours later. Leaving port we had a fair wind, but when we got outside the bold land of Hinchinbrook Island the weather was rather dirty, with a strong south-east wind. We soon reached the Family Islands, a group of five, with slopes more or less grassed to the water's edge, where the blue sparkling water, grey rock, and green sward formed agreeable contrasts. Dunk Island was passed on the weather side, then King's Reef, which runs between Clump Point on the mainland and the two South Barnard Islands.

After a fair run of thirty-five miles we made the North Barnard, a group of five islets lying at various distances up to two-and-a-half miles from the mainland, and dropped anchor at about half-past four o'clock to the leeward of the largest and outermost island. Here our little craft strained at her anchor, pitching and tossing all night, much to the discomfort of invalided passengers. At sunrise next morning our skipper pronounced the surf too great to enable the dinghy to land us with safety. This news was a great disappointment to us, especially as we were only a few cables' length from our much-coveted goal, so we decided to run for Mourilyan Harbour, on the mainland, distant about five miles, to wait until the weather moderated.

"Next morning at daybreak it looked calm outside, so with a gentle land breeze we quietly slipped out, and before breakfast were once again riding at anchor off the outer Barnard. The island rises out of the Coral Sea to an elevation of about three hundred feet. It is half-a-mile long by a quarter broad, and enshrouded in luxuriant vegetation. Trees great and small show above the prevailing dense scrub. Although we appeared to be close in shore, it was a long row in the dinghy. A curling wave shot us on to the coral strand, which was bordered at high-water mark with large, strongly-perfumed white lilies (*Crinum asiaticum*), growing from broad flag-like leaves. A beautiful convolvulus (*Ipomoea*) of blue and purple festooned the nearer bushes. Up the face of the island large, noble, and beautiful trees, the botanical name of which we had not learnt, met our gaze, contrasted with figs (*Ficus magnifolia*), *Pongamia glabra*, bearing large seed pods, and *Ixora timorensis* in flower, interlaced with small species of lawyer palm, and overgrown with innumerable creepers, pothos, and other climbers. I clambered up the face of a rough, rocky surface, with loose dark mould, sustaining crops of bird-nest ferns among vines and supplejacks; progress was rendered not only slow but difficult. When about half-way towards the summit of the island, I moved across the face and dipped into one of the numerous gullies or hollows which ran down to the sea. Here, with a fair outlook up and down hill, I waited the turn of events. Presently in the thicket I heard 'scrape.' My breechloader brought down through an entanglement of vegetation my first Rifle Bird—a female. After remaining in ambush some time I secured another female.

and returned to the strand, where I met the other members of the party in great ecstasies over a lovely male bird.

"Luncheon over, we took to the scrub, which was now uncomfortably damp from passing showers. After scrambling about until the perspiration was literally rolling off me, and as it had commenced to rain in earnest—real tropical showers—I thought, instead of chasing the birds, I would try an experiment and let them chase me. The idea was good, because after I had waited for some time there flew past me a lustrous black bird with rounded wings and of compact appearance. During flight its feathers produced a peculiar rustling noise like a new silk dress. Between thirty and forty yards off it alighted, and darted behind some green branches. In an instant, reckoning on the intervening obstruction, I discharged No. 6 instead of dust shot. I was immediately surrounded by thick smoke hanging in the damp air, but whether my beautiful feathered visitor had fallen or flown I knew not. Overcome with excitement, I felt as if I could hardly venture to ascertain. I crawled slowly up the gully through prickly creepers, and on parting a bush there I beheld a gorgeous male Rifle Bird, dead, upon its back. It was a beautiful object in its rich shining garb.

"Two males and one hen fell to the second member of the party. The botanist was a long time in showing up, so we conjectured that he was either lost or had obtained a big bag. Both surmises proved correct. Every attempt he made to reach the beach he found himself on the wrong side of the island, but during his wanderings he 'bagged' no less than three males and seven hens. When he emerged from the scrub he looked a woe-begone sight, dripping wet, scratched and bleeding, hair over his forehead, with gun in one hand, while under the other arm were the birds carefully rolled up in his hat. We enjoyed a hearty laugh. We soon got afloat, changed our clothes, and refreshed ourselves with a warm supper. Then followed the reckoning of the day's work—grand total, seventeen Birds of Paradise—the greatest day's taking of rarities recorded in the annals of Australian ornithology. Certainly it was a most unfortunate day for the poor birds, and for their sake let us hope it may never occur again. We were the best part of the night turning our booty into skins. The weight of one of the birds was a little over two ounces. About midnight we left our anchorage, and turned the cutter's nose towards Cardwell, wishing to reach port before Sunday. Good headway was made at the beginning, but at sunrise the wind died almost away, and we drifted on leisurely, aided by wind puffs and tides. It was a most charming day—above a cloudless vault, below the ocean, true to its name, Pacific. Lovely islands were slowly passed, behind which could be seen the mainland melting into distance. Taking all things into consideration, especially the unqualified success of the object of our cruise, we felt supremely happy.

"The success we met with during the eight hours we spent among the Rifle Birds only whetted our appetites for more information, especially as the dissection of one female bird proved that the breeding season had commenced, and the finding of a nest would be the greatest oological discovery of the day. Therefore we were urged to undertake another trip.

"The 'Burdekin' steamer (Captain J. Keir), a regular northern trader, was due at Cardwell from the south, and gave us the chance of staying two days at the islands. Terms were soon agreed upon, and once more our party left Cardwell. We were provided with a tent and a breaker of fresh water, the island being without springs.

"The steamer arrived abreast of our island shortly after three o'clock. The captain put us into the steamer's boat, and in landing we had much difficulty in keeping our paraphernalia dry on account of the surf. Our tent was pitched between two palm-like pandanus trees, surrounded by strongly-perfumed white lilies and thick foliage, adorned with convolvulus. The richly-wooded slopes of the island completely sheltered us on the windward side. Being in the Coral Sea, and under the protecting influence of the Great Barrier Reef, whose nearest edges were not more than ten miles off, we felt perfectly secure in our insular quarters. Winds might blow and storms beat, but no great billows can ever disturb these tranquil shores. The islet we were on had not been specifically named before, so during a passing shower, in the name of all that is beautiful in nature we christened it 'Ptilorhis,' that being the generic name of the lovely Rifle Bird so abundant in its scrubs. Notwithstanding the evening being showery, we climbed to the summit of Ptilorhis Island, but the result was *nil*. In our tent we spent a tolerably refreshing night, somewhat broken, however, by the annoyance caused by numerous indigenous bush rats, which are not quite so large as common city vermin. They are known as the long-haired rat (*Mus longipilus*) of Gould. These rats fearlessly entered the tent and attacked the provisions. They evidently had not seen human beings before, for they made themselves so uncommonly familiar as to run over our bodies. A pistol was discharged among them. The echo of the report from the island opposite had barely died away before the impertinent intruders were at their little games again.

"Wednesday, September 9th, was a bright day in our calendar. By daylight and before breakfast we entered the wet scrub, and were rewarded with a brace of beautiful White Nutmeg or Torres Strait Pigeons. These pigeons were just beginning to arrive from some northern latitudes. They roost at the islands at night, returning to the mainland to feed at sunrise. We saw dozens of last season's nests. Although we heard their loud 'coo' in different places, the Pigeons were difficult to sight through the thick foliage of the trees in which they sought refuge. After being much embarrassed by the wet scrub and canes, I got a splendid male Rifle Bird and a brace of hens (their plumage being at perfection at this period of the year). I then dropped into a sylvan nook to watch the actions of the birds around me. Here tall and thick foliage almost shut out the light of day. Pretty little Rufous Fantails darted at me as if I intruded upon their particular dominions; Zosterops chirped overhead; Megapodes or Scrub Hens, chased each other through the underwood, and, not detecting my presence, passed within a few feet, uttering curious crying calls. Where the ground was loamy they were patching up their huge egg-mounds for the coming season—interesting in their way, but the subject preoccupying my mind was Rifle Birds. At one time I was surrounded by no less than two male Rifle Birds and five hens; some were on

the ground turning over small stones and leaves in search of food, others were preening their beautiful quills or stretching their necks from behind a limb to watch me. Both male and female occasionally uttered the peculiar hoarse, guttural 'scrape' noise, which was sometimes repeated twice in succession. I could not sufficiently admire the splendid shining appearance of the male bird in every position, but when it darted through the rich green foliage or posed upon a rock it was really a superb creature. I felt convinced that the majority of the birds had not commenced to breed, so at intervals I fired small charges of dust-shot, and secured a pair of fine males and one hen. We all turned up at the tent hungry and wet, and over a warm 'billy' of tea exchanged experiences. The takings were distributed as follow:—The botanist, a pair of Rifle Birds and a pair of Pigeons; the younger brother, a pair of Rifles, a Megapode, and such small fry; and myself, three pairs of Rifles. Although a sharp look-out was kept none of us saw any traces of nests.

"Rats were again troublesome at night. They ran off with our preserved milk tin, and also destroyed one of our fine Pigeons. In the morning we expected the steamer, therefore we chiefly occupied ourselves in striking camp, &c., and gathering collections of sea-shells. There were volutes, cowries, cones, in endless profusion, the majority being empty. The beach was entirely composed of fragments of dead coral, hard as cement, washed up by the sea. When the tide was out the rocks, which are of singular formation, like those of the island, bespangled with mica crystals, retained innumerable curious marine creatures, such as small fish, water snakes, a most remarkable roundish animal furnished with long, brittle spines, live coral of bluish tint, &c. Abundance of oysters adhered to the rocks. After a while the 'Burdekin' hove in sight. Since our landing the surf had increased considerably, and the crew had to manœuvre to keep the boat from being swamped by the breakers while taking us off. Without mishap, Cardwell was reached at six p.m. Thus ended our second excursion to the Barnards (or *Bar-nards*, as many persons insist upon calling them, by placing the accent on the second syllable), making a most agreeable climax to our 'Naturalists' Camp in Northern Queensland.'"

In 1887 I received from Mr. Charles French, F.L.S., the supposed nest and eggs of the Victoria Rifle Bird, which I described in the "Naturalist" of that year. The specimens were found in the Cardwell Scrubs by an intelligent reliable collector of Mr. French; but upon Messrs. Le Souëf and Barnard's subsequent discovery, it appeared the collector, Mr. French, and myself had been misled—the old story of "one fool makes many."

The honour of the first authenticated discovery of the nest and eggs of the Victoria Rifle Bird rests with my friends, Mr. Dudley Le Souëf and Mr. Harry Barnard, who visited the Barnard Islands, and, as if drawn by psychological influence, actually pitched their camp under a tree which was afterwards found to contain a nest and egg, and the hen of the rare bird sitting thereon.

The following is Mr. Le Souëf's own description of the finding of the nest:—"The nest was found 19th November, 1891. Mr. Harry Barnard and myself watched the hen bird for some time, and saw her fly into the

crown of a pandanus tree growing close to the open beach. Although we could not distinguish the nest itself, we could see the head of the bird as she sat on it. The nest was about ten feet from the ground, and the bird sat quietly, notwithstanding we were camped about five feet away from the tree."

Meeting Mr. Le Souëf at Brisbane on his return home, I was one of the first to see his new and interesting discovery. He, with characteristic thoughtfulness, permitted me to describe the nest and egg. I took the earliest opportunity of doing so by describing them at the next (December) meeting of the Field Naturalists' Club, and thereby corrected my former error. The egg was afterwards figured by Mr. Le Souëf in the Proceedings of the Royal Society of Victoria, and finally found a secure resting-place, as the type specimen, in the collection of the Australian Museum, Sydney.

It would appear that Messrs. Le Souëf and Barnard visited the inner Barnard Islands, and not the outer, where my party and I found the Rifle Birds so numerous.

Mr. Le Souëf made further inroads into the secluded domains of the Rifle Bird, but this time on the mainland in the Bloomfield River district, where he found the birds fairly plentiful in the scrubs, especially near the coast, their harsh note being often heard. They were by no means shy, and seemed to be very local, but great difficulty is attached to finding their nests. One was discovered 29th October in a fan palm, not far from the ground, by the blacks when clearing a place for their camp. It contained a pair of beautifully-marked eggs. Before Mr. Le Souëf left, he found another nest building in a cordyline, only about seven or eight feet from the ground. The nest was carefully watched, and the eggs were taken 20th November by Mr. R. Hislop for the finder. These eggs, a perfect pair, the third recorded find, and with a history so complete, new adorn my collection.

Mr. Le Souëf saw a pair of Rifle Birds endeavouring to drive a Black (Quey) Butcher Bird from the neighbourhood of their (the Rifles') nest, when they uttered a different note to their usual one.

In building, according to Mr. Le Souëf, the Rifles seem to possess an extraordinary fascination for shed snake skins, as in two instances he saw pieces of snake skin worked into their nest, one piece being about three feet long, most of which was hanging loose. The hen bird, when sitting on her nest, is not easily disturbed.

Mr. W. B. Barnard, who, with an English friend (Mr. Albert Meek), was collecting in the vicinity of the Bloomfield River at the time of Mr. Le Souëf's visit, has kindly supplied his field notes respecting the nidification of the Victoria Rifle Bird. He says:—"Three nests with two eggs each were found. Two eggs were broken. The nest is often built in the fan palm, right at the trunk of the tree where the fronds join, fairly well hidden amongst the fibre. Mr. Le Souëf gives a good photograph of the nest. In one nest a snake's skin hung from inside down two feet. These birds build from the first week in September till the end of November."

56.—PTILORHIS ALBERTI, Elliot.—(365)

ALBERT RIFLE BIRD.

Figure.—Gould: Birds of Australia, fol., supp., pl. 51.

Reference.—Cat. Birds Brit. Mus., vol. iii, p. 156.

Previous Description of Eggs.—Le Souéf: Ibis p. 394 (1897)

Geographical Distribution.—North Queensland (Cape York).

Nest.—Open, loosely constructed of broad dead leaves and a few twigs; lined inside with fine straight pieces of twigs. Usually situated in a pandanus palm or other tree in the scrub. Dimensions over all, 9 to 10 inches by 5 inches in depth; egg cavity, $3\frac{1}{2}$ to 4 inches across by 2 inches deep.

Eggs.—Clutch, two; inclined to oval in form; texture of shell somewhat fine; surface glossy, but with hair-like creases or pressure lines; colour, yellowish-white or creamy-buff, singularly streaked longitudinally, as if with a brush, with brownish-olive or rufous-brown and slate. Dimensions in inches of a proper pair: (1) $1.27 \times .9$, (2) $1.3 \times .89$. (Plate 6.)

Another type of eggs (there appear to be two very distinct ones) has a deeper ground-colour of ochraceous-buff with similar markings to the other. Dimensions: (1) $1.28 \times .95$, (2) $1.34 \times .98$.

Observations.—This truly "Magnificent" Rifle Bird, a name it was first called by Gould, inhabits the densest scrubs in the neighbourhood of Cape York, to which the species appears to be restricted.

Macgillivray, who furnished Gould with some observations on the bird, stated that the ovary of a female shot in November contained a very large and nearly developed egg. According to the testimony of the natives, whom Macgillivray questioned on the subject, the Albert Rifle Bird nested in a hollow tree, laying several white eggs.

However, this is not the only published statement respecting the Rifle Bird laying white eggs. Dr. Ramsay, in the "P.Z.S.," p. 599 (1875), with regard to the *P. paradisica*, states that the natives informed him that the Rifle Bird lays its eggs, which are white, in the hollow branch of a tree, without making any nest. So much for the stories of natives.

With commendable enterprise Dr. Charles Ryan, Dr. Wm. Snowball and Mr. Dudley Le Souéf secured the services of Mr. Harry Barnard, whose reputation as an excellent and reliable field naturalist is well known, and subsidised him in the field for a season (1896-7) in the rich region of Cape York.

Amongst Mr. Barnard's more important finds were the nests and eggs, new to science, of the following birds, namely:—Albert Rifle Bird (*Ptilorhis alberti*), the only Manucode Australia possesses (*Phonygama gouldi*), a comparatively new Frill-necked Flycatcher (*Arses lorealis*), the Yellow-breasted Flycatcher (*Machaerhynchus flaviventer*), and the Broad-billed Flycatcher (*Myiagra latirostris*), this bird being discovered by Gilbert nearly fifty years previously. In addition to these discoveries,

a new and local variety of *Talegallus* (*T. purpureicollis*) has been established, and the White-faced Robin (*Poecilodryas albifacies*) recorded as an addition to the Australian avifauna; hitherto it had only been recorded for New Guinea.

In his original description of the nest (also figured) and eggs in the "Ibis," Mr. Le Souëf quotes the interesting field notes of Mr. Barnard, who noticed, as a rule, these nests were placed in very conspicuous spots, the birds selecting patches of scrub where the undergrowth was very thin, evidently with the intention, Mr. Barnard thought, of seeing the approach of an enemy, as he did not in a single instance flush a bird from the nest. The birds were extremely shy and difficult to shoot. They did not seem partial to any particular kind of tree to breed in, as nests were found in pandanus, palms, and small trees that had their tops broken off and where shoots were springing; or against the stems of trees where two or three vines met. In one instance a nest was situated on the top of a stump eighteen inches from the ground.

Through the generosity of the "syndicate" I was presented with a fine set of these rare eggs, besides being permitted to examine the whole splendid series. The presentation set happened to be the first actually handled by Mr. Barnard, and probably the first of these eggs ever seen by white man; therefore, with such unique specimens, I must needs have a special paragraph for this work, which was most kindly supplied by Mr. Barnard after he had returned home. He says:—"I am glad you have received a pair of the Rifle Bird's eggs. The day I found them I was walking along the side of a hill covered with tall scrub, with very little undergrowth, though there was a good number of young palms about (also Rifle Birds). I was thinking of returning to camp, when I saw a nest—the one forwarded to Mr. Le Souëf—in a young palm about fifty yards ahead of me, which I took to be the nest of the small Shrike Thrush. but on reaching up and putting my hand in I was delighted to find two Rifle Bird's eggs. I sat down by a fallen tree, and waited nearly three hours before the female appeared, when I shot her. The nest was just seven feet from the ground.

"While waiting for the bird I heard a rustle in the leaves behind me, and, turning my head, saw a small iguana with a huge centipede which the reptile was trying to swallow. On my making a slight movement, the iguana caught sight of me, and for a few seconds remained perfectly still, holding the centipede by the head, while the latter vainly endeavoured to escape by twisting round the lizard's head. After watching me for a few minutes the lizard ran up a tree for about ten feet, gave a sudden gulp, and swallowed the centipede, then calmly climbed to the top of the tree. I should imagine the lizard felt a bit queer for a time, from the contortions of the centipede, because it was a long way from being dead when it was swallowed."

I hope I am not letting the secrets of the "syndicate" out of the bag when I state that Mr. Barnard's exertions were crowned by the discovery of no less than fourteen nests of the Albert Rifle Bird. I state this more particularly to show the limits of the laying season, although possibly some of the eggs found were the second laying in nests previously "rifled" by Mr. Barnard.

The first nest was discovered on 23rd October, 1896; the last taken on 15th February following. In nearly every instance Mr. Barnard succeeded in getting the proper pair of eggs. If the first egg were left, in some unaccountable manner it always disappeared; therefore, when a nest was found containing a single egg, upon the wise principle of "a bird (or an egg) in the hand is worth two in the bush," it was taken, whereupon the obliging bird laid the second egg next day.

As has been truly observed, the various Rifle Birds' eggs are certainly amongst the most beautiful and striking of those of Australian birds.

I requested Mr. Barnard to furnish me with a characteristic pose of a male bird for museum purposes. He obligingly replies:—"Re pose of Cape York Rifle Bird.—It generally selects a large horizontal vine stretched between two trees, throws its wings forward till the ends meet, and rubbing them together makes a loud rustling noise, which can be heard some distance away, at the same time the bird throws its head from side to side, or first over one shoulder, then over the other. At another time a bird would get on an upright vine or stick, spread its wings and tail and then throw itself first round one side of its support and then on the other, the head being thrown well back."

SUB-FAMILY—PARADISEINÆ.

57.—PHONYGAMA GOULDI, Gray.—(133)

MANUCODE.

Figure.—Gould: Birds of Australia, fol., supp., pl. 9.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 181.

Previous Description of Eggs.—Le Souëf; Ibis, p. 54 (1898).

Geographical Distribution.—North Queensland.

Nest.—Open, somewhat shallow; composed of strong curly tendrils of creeping plants, and lined inside with finer tendrils. The original nest found was fixed in the forked branchlet of a forest tree. (See illustration.) Dimensions over all, 6 to 8 inches by 4 inches in depth; egg cavity, $3\frac{1}{2}$ to 4 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two; oval in form, or more pointed towards one end; texture of shell fine; surface very slightly glossy; colour (of one egg in the type clutch), light purplish-pink, marked and streaked longitudinally with pinkish-red or reddish-chestnut and purple, the markings being more numerous and inclined to be blotchy on the apex. Dimensions in inches: $1.42 \times .96$. (Plate 6). The second egg has the ground-colour of a darker shade, and the markings are not so distinct. Dimensions: $1.42 \times .95$ inches.



MANUCODE'S NEST

From a Photo by D. Le Soutf.

Observations.—The Manucode is a member of the Bird of Paradise family. Gould did not know the exact position this bird should take in the natural system, so he dumped it down after the Drongo Shrike, and before the Flycatchers. His original description was taken from a fine male obtained at Cape York by Macgillivray in 1849.

Forty-eight years afterwards it fell to the honour of Mr. Harry Barnard to discover in the same locality a nest and eggs of this rare and local species, and to Mr. Le Souéf to describe them. However, there is either a clerical or typographical error in the shorter dimensions of the eggs as given in the "Ibis." The following are Mr. Le Souéf's remarks, from the "Ibis," which were accompanied by a well-executed photograph of the nest:—"Mr. H. G. Barnard found the nest and two eggs of this species on January 23rd, 1897, near Somerset; he states that the birds were not numerous, and that they were generally in pairs. He shot a female in the beginning of December that had laid an egg a short time previously, but though he hunted about for some time he could not find the nest. The birds were remarkably shy, and it was impossible to get near enough in the scrub to watch them. It is probable that the egg of this bird will always be a rarity, as the nests are hard to find; they are very similar to those of the Drongo Shrike (*Chibia bracteata*), and the eggs are also somewhat alike. The nest is a shallow, open structure, and is made of curly vine tendrils, the inside being lined with the same material, only finer; and on the branch on which the nest was built, and in conjunction with it, an orchid was growing, a portion of which the bird had worked into the outside of its nest. It was built on a horizontal fork of a tall scrub-tree growing in forest country, about twenty yards from dense scrub; the height of the nest from the ground was about forty-eight feet."

FAMILY—ORIOOLIDÆ: ORIOLES.

58.—ORIOBUS AFFINIS, Gould. —(284)

NORTHERN ORIOLE.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 183

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 465 (1865). Diggles. Companion Gould's Handbook, (1877). Ramsay: Proc. Linn. Soc., N. S. Wales, vol. vi., p. 576 (1881). North Austr. Mus. Cat., pl. ii., fig. 12 (1889). Le Souéf: Victorian Naturalist, vol. xvi., p. 62 (1899).

Geographical Distribution.—North-west Australia, Northern Territory and Queensland.

Nest.—Open, very deep, large; formed of very narrow strips of paper-like bark mixed with a few twigs; lined inside with very fine wiry twigs (Gould).

Eggs.—Clutch, three; inclined to oval in form; texture somewhat fine; surface glossy; colour, varies from yellowish-white to rich cream, boldly blotched, chiefly round the apex, with dark-umber and bluish-grey or slate. Dimensions of a proper clutch: (1) $1.39 \times .93$, (2) $1.34 \times .95$, (3) $1.3 \times .92$.

Observations.—The range of this good species extends across Northern Australia. It inosculates in Queensland with its near ally and more southern representative, *O. viridis*, coming as far south as Fitzroy River district, where the Messrs. Barnard secured specimens; and to their father, the late Mr. George Barnard, I was first indebted in 1881 for eggs. On the station eggs have been taken as late as 16th February.

Gilbert (according to Gould) found the birds plentiful in every part of the Coburg Peninsula and adjacent islands. A nest (the first recorded) he found on 4th December containing two nearly hatched eggs. It was attached to a drooping branch of a melaleuca, at a distance of about five feet from the ground.

59.—ORIOLE FLAVICINCTUS, King.—(285)

YELLOW ORIOLE.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 14.

Reference.—Cat. Birds Brit. Mus., vol. iii. p. 206.

Previous Descriptions of Eggs.—Le Souëf: Proc. Roy. Soc., Victoria, vol. vii., new ser., p. 19 (1895), also Victorian Naturalist, fig. 3 (1896).

Geographical Distribution.—Northern Territory and North Queensland.

Nest.—Open; outwardly composed entirely of strips of the brown bark of melaleuca worked on to a thin horizontal forked branch; lined sparingly inside with fine dark-brownish twigs and tendrils of vines or climbing plants. Dimensions over all, about 7 inches by 4 inches in depth; egg cavity $3\frac{1}{2}$ inches across by $2\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three; oval in form; texture of shell somewhat fine; surface glossy, but sometimes irregular by reason of limy nodules; colour, light-cream, spotted and blotched, chiefly about the apex, with dark-brown or umber and dull-slate. Dimensions in inches of a large pair: (1) $1.3 \times .92$, (2) $1.34 \times .92$; of a small pair: (1) $1.18 \times .86$, (2) $1.24 \times .86$.

Some clutches are still smaller in size and darker in colour, like those of the southern species.

Observations.—The Yellow or Crescent-marked Oriole is the largest and most richly-plumaged of the three Australian Orioles. It appears to be restricted chiefly to the coastal forests and scrubs of Northern Australia. Little is really known about the bird, which has a pleasing plumage of dappled greenish-yellow, set off with orange-tinted eyes and blood-red bill.

At our Cardwell camp this bird sometimes found its way into our stew-pot. The flesh was excellent eating. The bird produces a somewhat guttural note exceedingly loud for the size of the bird. Its song many times allured us into quagmires among the mangroves when we wanted to shoot a bird.

During his Northern Queensland excursion in 1893 Mr. D. Le Souëf likewise invaded its haunts, and was fortunate in finding a nest on the 3rd November. In describing the eggs before the Royal Society of Victoria, Mr. Le Souëf stated that these birds were sometimes seen in the open country. The parents were secured with the nest, which was suspended from a fork near the extremity of a thin bough of a melaleuca, about forty feet from the ground, and difficult to get at.

Breeding months October to January.

The following data are taken from Mr. Harry Barnard's field notes while collecting at Cape York, season 1896-7:—"October, two nests, three eggs each; November, one nest, three eggs; December, three nests, each three eggs; January, three nests, each two eggs."

60.—ORIOLE VIRIDIS, Latham. — (283)

ORIOLE.

Figure.—Gould: Birds of Australia, fol. vol. iv., pl. 13.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 212.

Previous Descriptions of Eggs.—Gould: Birds of Australia, fol. (1848).
Ramsay: Ibis, p. 179 (1863), *id.*: Gould: Handbook, vol. i., p. 463 (1865).

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.

Nest.—Open, deep, bulky; constructed of strips of soft, string-like bark interwoven and matted with leaves, spiders' cocoons, &c., sometimes including string or jute gathered near habitations; lined inside with stalks of coarse grass; usually suspended by the rim at the end of a pendulous branch of eucalypt, casuarina, or other tree in forest country. Dimensions over all, 6 to 7 inches by $5\frac{1}{2}$ inches in depth; egg cavity, 4 inches across by $2\frac{3}{4}$ inches deep.

Eggs.—Clutch, three, rare instances four; inclined to oval in form; texture of shell somewhat fine; surface glossy, sometimes with line-like longitudinal marks or creases; colour, light-cream, spotted, and moderately but boldly blotched with umber and dull-grey. Dimensions in inches of a proper clutch: (1) $1.38 \times .92$, (2) $1.37 \times .93$, (3) $1.35 \times .92$. (Plate 6.)

Observations.—The Oriole wears a greenish-coloured coat, with the under surface white, beautifully mottled with black, the whole finished off with scarlet eyes and flesh-coloured bill. Total length, $10\frac{3}{4}$ inches; wing, $6\frac{3}{4}$ inches; tail, $4\frac{3}{4}$ inches; bill, $1\frac{1}{4}$ inches; tarsus, $\frac{7}{8}$ inch.

This interesting bird enjoys a habitat ranging over the greater part of Eastern Australia. It wanders to the more southern parts of its range during the spring and summer months, when its melancholy but melodious babbling song may be often heard from the topmost branches of some tall tree in the forest.

Gould did not find the Oriole in South Australia; but on the evidence of Mr. W. White that State may be included in its habitat.

Once in the Echuca district I heard a bird as early as the first week in July, but heard none again till 1st August. It is possible that during winter the birds do not altogether leave that district. In the Somerville district (Victoria) they have been noticed up till the middle of April, showing a partiality for figs.

During the winter Dr. Ramsay, on the Sydney side, found them in small flocks feeding on various cultivated and wild fruits. He observed that towards the beginning of September they pair and seek breeding places, each couple selecting a distinct locality, where they remain during the whole season; even if their nest is taken they will continue building near the same place until the season expires.

From my own field notes I find in Victoria I have taken nests—

“October (1870?).—Glen Iris, two eggs, with egg of Pallid Cuckoo.”

“18th October, 1880.—Phillip Island, nest, three eggs.”

“4th December, 1886.—Doncaster, nest, two eggs, half incubated.”

“20th November, 1897.—In company with Mr. G. E. Shepherd, Somerville, three eggs.”

The three former nests were placed in somewhat exposed situations.

In two instances (seasons 1860 and 1861 respectively) Dr. Ramsay records finding Orioles' nests with clutches of four eggs.

The Oriole is one of the foster-parents of the Pallid Cuckoo. Mr. S. W. Jackson, of Grafton, New South Wales, found the egg of the Koel or Flinders Cuckoo under very interesting circumstances in an Oriole's nest on 31st October, 1894.

Breeding months September to January.

In his “*Bush Wanderings of a Naturalist*,” Mr. H. W. Wheelwright wrote:—“One of the sweetest sounds of the forest, to my ear, was the loud monotonous note of the Green Thrush (Oriole) from the topmost branches of a high gum-tree, on one of those clear delicious mornings so peculiar to the Australian spring. Although not to be compared to the rich and varied song of the British Thrush, there is a gush of melody in the song of the Australian bird equal to any of our finest songsters; and as I often and often stood at my tent door about sunrise and listened to its wild desultory carol, borne upon the early breeze, laden with fragrance of many a thousand blossoms, I have thought how dull and senseless must that blockhead have been who described Australia as a land where the flowers have no scent and the birds no song.”

61.—*SPHECOTHERES MAXILLARIS*, Latham.—(286)

FIG BIRD.

Figure.—Gould: *Birds of Australia*, fol. vol. iv., pl. 15.

Reference.—*Cat. Birds Brit. Mus.*, vol. iii., p. 224

Previous Descriptions of Eggs.—Fitzgerald: *Proc. Linn. Soc., N. S. Wales*, vol. ii., 2nd ser., p. 970 (1887); *North Austr. Mus. Cat.*, pl. 11, fig. 11, (1889), also *Rec Austr. Mus.*, vol. i. p. 113 (1891).

Geographical Distribution.—Northern Territory (?), Queensland, and New South Wales.



ORIOLE'S NEST, SHOWING EGG OF THE KOEL.

From a Photo by S. W. Jackson.

Nest.—Open, shallow; thinly but firmly constructed of fine lengthened twigs upon a foundation of vine tendrils; generally situated in a horizontal fork at the extremity of a branch. Dimensions over all, 7 inches by $2\frac{3}{4}$ inches in depth; egg cavity, 4 inches across by $1\frac{1}{4}$ inches deep. (See illustration.)

The contents of a nest may be easily seen from beneath. Nests in small families, and sometimes interspersed with those of Orioles.

Eggs.—Clutch, three; inclined to oval in form; texture of shell moderately fine; surface glossy; colour, dull or warmish-green, sometimes bluish-green, spotted and blotched with rufous or reddish-brown and dull purplish-brown, the edges of the former class of markings having a blurred appearance. These eggs are exceedingly beautiful. Dimensions in inches of a pair: (1) $1.35 \times .93$, (2) $1.28 \times .95$; of a full clutch: (1) $1.27 \times .86$, (2) $1.21 \times .88$, (3) $1.19 \times .88$.

Observations.—The Sphecotheres or Fig Birds appear to have affinity to the Orioles, and have been found breeding in company with them. They have a greenish-coloured coat tipped with black. A narrow space of naked skin, dull-yellow in colour, surrounds the eyes; throat, chest, and back of neck are grey; flanks and abdomen yellowish-green. The female is plainer coloured, like an Oriole. The various dimensions are similar to those given for the Oriole.

Gould shot a bird of the species under notice at the mouth of the Hunter River, which is probably its most southern limit, and although called the Southern Fig Bird, it ranges well northward, even to perhaps the Northern Territory.

Mr. R. D. Fitzgerald first discovered the eggs of the Fig Bird in the Richmond River district, November, 1886, which he subsequently described. I believe Fig Birds have been actually seen nesting in the tall trees in the township of Grafton, Clarence River.

On the 8th November Mr. Grime found, further north, on the Tweed River, a second nest containing two eggs, which were forwarded to the Australian Museum, Sydney, with interesting particulars, which I take from the "Records:"—

"I have found two nests this season of *S. marillaris*. They were built in each instance in the 'swamp tea-tree,' at a height of about forty feet from the ground; the nests are attached by the brim to the thin branches of an outspreading bough, and what surprises me is how the eggs are not shaken out of the nest by the wind. The last nest I found, after climbing the tree to the limb on which the nest was placed, I reached out as far as I could on it and attached a piece of rope, and then drew the limb to the main trunk and secured it; this brought the nest nearer, but above my head, so when I climbed further up I could reach it. There were three eggs in the nest, but I broke one before reaching the ground."

I am indebted to Mr. S. W. Jackson for a pair of these eggs. The following is the data accompanying them:—

"The eggs I forwarded you of the Southern Sphecotheres I found last season, on December 12th (1894). The nest was built at the end of a long limb of an ironbark tree, and was about twenty-six feet from the

ground; the eggs can be easily seen through the nest, which is cup-shaped, and measures about 5 or 6 inches across and $1\frac{3}{4}$ inches deep, constructed of roots, rushes, and grass, loosely placed together and attached to the fork of some leaning limb. The red cedar-tree is usually selected to build in; the eggs laid for a sitting are from two to three, and vary greatly both in size and markings.

"These Sphecotheres arrive here in the middle of September, and leave again from about January 29th to February 10th."

I subsequently received a most beautiful set of three eggs from Mr. W. B. Barnard, taken at Crowsdale, Queensland, 8th December, 1897

62.—SPHECOTHERES FLAVIVENTRIS, Gould.—(287)

YELLOW-BELLIED FIG BIRD.

Figure.—Gould: Birds of Australia, fol , supp., pl. 37.

Reference.—Cat. Birds Brit Mus., vol. iii., p. 225.

Previous Descriptions of Eggs.—Le Souëf: Proc. Roy. Soc., Victoria, vol. vii., p. 20 (1895); also Victorian Naturalist, vol. xvi., p. 62, (1899).

Geographical Distribution.—Northern Territory, Queensland and New South Wales, also Ké Islands.

Nest.—Open, shallow; composed of wire-like stalks or tendrils of plants, and lined inside with brownish twigs. The structure can be easily seen through from beneath. Several nests are usually placed in the topmost horizontal branches of a tall eucalypt. Dimensions over all, 5 inches by 3 inches in depth; egg cavity, $3\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three; oval in shape; texture of shell moderately fine; surface glossy; colour, varies from a delicate green to olive-brown, but usually pale or light-green, moderately spotted and blotched with rufous or reddish-brown and purplish-brown. Similar to those of the Southern Fig Bird. Dimensions in inches of a pair: (1) $1.23 \times .91$, (2) $1.2 \times .92$. (Plate 6.)

Observations.—The Yellow-bellied Fig Bird is usually confined to Northern Australia and some of the islands beyond. However, Mr. S. W. Jackson noticed it in the Clarence district of New South Wales, January, 1890; and another season subsequently, during the same month, he saw numbers of the bird at Byron Bay, where he shot a pair. The male is a beautiful creature, its rich jonquil-yellow under surface being shown off to perfection with an aesthetic olive-green coat and glossy black cap, and eyes surrounded by bright crimson orbits. The female differs from her lord in being olive-brown with streaked markings like her cousins, the Orioles. Total length, $10\frac{1}{2}$ inches; wing, $5\frac{3}{4}$ inches; bill, $1\frac{1}{8}$ inches; tail, $4\frac{1}{4}$ inches; tarsus, $\frac{7}{8}$ inch.

The most striking birds that visited the precincts of our camp at Cardwell were the males of this species. They often, especially in the morning, perched on the summit of the very trees to which our tents were



NEST OF THE FIG-BIRD.

From a Photo by the Author.

suspended, and poured forth over our heads beautiful songs not altogether unlike those of the English Thrush. As in the case of the Yellow Oriole, we were much too early in the season for eggs.

Macgillivray, a valuable correspondent of Gould, reported that once at Cape York he saw several nests which he (Macgillivray) entertained no doubt belonged to this bird; nearly all of them were built among the topmost branches of very large gum-trees, which the natives could not be induced to climb.

However, it was left to Mr. Dudley Le Souëf years after to bring to scientific light the nest and eggs. He found the birds plentiful in the open country in the Bloomfield River district, and, as Macgillivray also noticed, often in company with Friar Birds (*Philemon*).

Mr. Le Souëf's own words are:—"We noticed them building on a small white gum-tree, on 18th October (1893), and found five of their nests on the tree, also that of a Silvery-crowned Leatherhead (*P. argenteiceps*); they were all built near the ends of thin boughs, and only one could be got to by our native climber. We could see from below how many eggs were in each nest, the full clutch being three. Our blackfellow had a long thin stick, and the nests he could not get at, he rolled the eggs out one by one, and I caught them all uninjured in my hat as they fell."

A field note, kindly sent me from Mr. W. B. Barnard, states that at Bloomfield River he found the Yellow-bellied Fig Bird breeding in the month of January. At the extreme north (Cape York) his brother, Mr. Harry Barnard, in 1896 took the following nests:—In October, four nests, two with each three eggs, and two with two; November, two with each three eggs; December, one with two eggs.

Usual breeding months October to January.

FAMILY—DICRURIDÆ: DRONGOS.

63.—CHIBIA BRACTEATA, Gould.—(132)

DRONGO.

Figure.—Gould. Birds of Australia, fol., vol. ii., pl. 82.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 236.

Previous Descriptions of Eggs.—Campbell: Victorian Naturalist (1889); North: Rec. Austr. Mus., vol. ii., p. 14 (1892)

Geographical Distribution.—Northern Territory, Queensland, New South Wales, Victoria, and Tasmania (accidental), also New Guinea.

Nest.—Open, somewhat shallow; composed of a few weather-beaten rootlets and stalks or tendrils of climbing plants, lined inside with thin wire-like yellowish rootlets. When viewed from beneath, sky-light may be seen through the structure. Generally placed in forked twigs at the extremity of a branch of a tree, usually a eucalypt, at the height of from twenty to thirty feet from the ground. Dimensions over all, 6 inches by 4 inches deep; egg cavity, 4 inches across by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, three to four; almost oval in shape; texture of shell fine and thin; surface slightly glossy; colour, a light pinkish shade, or of a delicate pinkish blush, sparingly and softly spotted with pinkish-red and purple, also with a few spots of chestnut, all the markings being more numerous about the larger end. In others the surface is covered with larger markings, the pinkish ones being more irregularly-shaped or wavy, with confluent patches on the apex. In some others the markings are not so red or pinkish, being more of a dark-umber, with the sub-surface markings purplish-slate. Dimensions in inches of a proper clutch: (1) $1.27 \times .85$, (2) $1.24 \times .83$, (3) $1.19 \times .83$; of a set of smaller-sized examples: (1) $1.12 \times .75$, (2) $1.05 \times .75$, (3) $1.03 \times .75$, (4) $1.03 \times .75$. In a series the sizes will be found to vary considerably. The eggs are exceedingly beautiful, and at first sight some resemble a light-coloured variety of the better-known eggs of the Friar Bird (*Philemon corniculatus*). However, in some examples the ground-colour may be said to be almost white. (Plate 6.)

Observations.—The Drongo Shrike has been observed in all the States, except South and West Australia, its true home, however, being the northern forests and scrubs, where its harsh noisy notes once heard are never to be forgotten. The bird appears to be a partial migrant, occasionally wandering as far south as Tasmania, where it was first recorded in 1888. Specimens taken in Eastern Gippsland, Victoria, 1885, are in the National Museum and in the collection of birds of the Government Entomologist, Melbourne, while Mr. C. C. Brittlebank saw a bird answering the description of the Drongo in the Lerderberg Ranges, Victoria, November, 1893.

In the Northern Territory Gilbert discovered several nests of the Drongo. He recorded:—"I found five nests on the 16th of November, all of which contained young birds, some of them nearly able to fly, and others apparently had just emerged from the shell. The whole of these nests were exactly alike and formed of the same material—the dry, wiry climbing stalks of a common parasitic plant, without any kind of lining; they were exceedingly difficult to examine, from being placed on the weakest part of the extremities of horizontal branches of a thickly-foliaged tree, at an altitude of not less than thirty feet from the ground; they were of very shallow form, about $5\frac{1}{2}$ inches in diameter; three nests contained three, and the other two four young birds each."

The eggs of the Drongo I was privileged first to describe, composed a set of four taken at Wonga Wallan, South Queensland, by a collector of Mr. A. Coles, the taxidermist.

Mr. North records that Mr. C. C. L. Talbot found on Collaroy Station, Broad Sound, Queensland, one day (10th October), no less than twelve nests of the Drongo, placed in trees about fifty yards apart. Each nest contained three eggs—in some instances fresh, others partly incubated.

Mr. Harry Barnard, at Cape York, December, 1896, took two nests, each containing three eggs, and in January following ten nests with each three eggs, except in two instances of four.

Breeding season October to January.

FAMILY—PRIONOPIDÆ: WOOD SHRIKES.

SUB-FAMILY—PRIONOPINÆ.

64.—GRALLINA PICATA, Latham.—(102)

MAGPIE LARK.

Figure.—Gould. Birds of Australia, fol., vol. ii., pl. 54

Reference.—Cat. Birds Brit. Mus., vol. iii., pl. 272.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 190 (1865); North: Austr. Mus. Cat. p. 79, pl. 8, fig. 12 (1889); Campbell: Geelong Naturalist, vol. vi., p. 5 (1896).

Geographical Distribution.—Throughout Australia and Tasmania (accidental).

Nest.—Bowl-shaped, built of mud, usually black, but varies in shade according to locality where gathered; lined inside sparingly with grass and a few feathers, and usually situated on a bare horizontal limb of a tree in the vicinity of water, overhanging a stream, or standing in a lagoon. Dimensions over all, $5\frac{1}{2}$ by $4\frac{1}{2}$ to 5 inches in depth; egg cavity, $4\frac{1}{2}$ inches across by $2\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, three to four, occasionally five; usual shape pyriform; texture of shell fine, and surface glossy; colour, pearly-white, spotted about the apex with dark purplish-red and light-purple, but generally the ground-colour is pinkish, ranging in tone from light pink or pinkish-white to rich buffy-red, with markings of pinkish-red and purple, confluent, and forming a belt around the upper quarter; in some examples the markings are more blotched, and distributed over the whole surface. Dimensions in inches of two proper clutches: A (1) $1.14 \times .8$, (2) $1.11 \times .82$, (3) $1.10 \times .8$, (4) $1.1 \times .81$; B (1) $1.8 \times .82$, (2) $1.08 \times .8$, (3) $1.6 \times .81$, (4) $1.05 \times .78$, (5) $1.03 \times .78$. (Plate 6.)

Observations.—It is well that this interesting and most useful of insectivorous birds is a cosmopolitan as far as Australia is concerned. The sexes are similar in size, both black and white, but the female is readily distinguished by her white face, whereas the male's is black. Bill and eyes are yellowish in both; total length of a specimen about 10 inches. Almost in any locality where fresh water is found, from north to south or from east to west, the familiar pied-plumaged figures of the Grallina may be seen, or its plaintive call heard. However, the bird is only accidental to Tasmania. Gould was of opinion the Grallina was only a partial migrant to Northern Australia, or was not stationary there, departing during the rainy season—that is, the summer. It would be well if this statement were verified.

The hard mud-constructed nests of the Magpie Lark or Grallina always attract attention, so conspicuous do they appear, cemented on to a naked limb. Sometimes several are seen in the same tree, being the homes of successive seasons, for it takes many winters' rains to totally demolish a

Grallina's nest. These old homes are also attractive to other birds, such as the White-rumped Wood Swallow (*Artamus leucopygialis*), and Little Cuckoo Shrike (*Graucalus mentalis*), the former invariably, the latter occasionally constructing their own nests within the roomy and secure one of the Magpie Lark. If a clutch of eggs be removed, the Magpie Lark will lay again in the same nest; but a new nest is usually built every year, if not for every brood, of which there are two or more a season.

I recorded, 8th November, 1894, in the Proceedings of the Royal Society of Victoria, the occurrence of the egg of the Pallid Cuckoo (*C. pallidus*) in the nest of the Grallina. The nest was taken at Cheltenham by my young friend, Mr. John Sommers, and contained five eggs of the Grallina besides the Cuckoo's egg. For many years Mr. S. W. Jackson could depend on taking sets of pure white eggs, laid by a Magpie Lark, in the Clarence River district. I examined one of these singular sets in Mr. Jackson's collection.

During the wet season, 1889, in the neighbourhood of the Lower Murray, where nearly all the adjacent country was under water, some Magpie Larks, so Mr. George H. Morton informs me, elected to nest in certain very odd places. One built its nest on the rail of a swing gate; another upon the top of a post; whilst a third bird selected some iron hooks suspended in an outhed. Mr. C. M. Maplestone, a member of our Field Naturalists' Club, remembers another odd situation for a nest, where the bird reared her young securely—the top of a telegraph pole on the high road between Camperdown and Lismore, Victoria.

A friend of mine once observed a reddish-brown tree-snake (*Dipsas fusca*) in the act of taking young from the nest of a Magpie Lark, having had his attention directed to the spot by the terrified cries of the parent birds. When the snake found it was discovered, by the presence of stout sticks whizzing past uncomfortably close to its head, the reptile flattened itself along the limb, as if to avoid observation, or at all events to evade the flying sticks.

The breeding months are chiefly from September to January. Sometimes in Queensland as early as the beginning of August; whilst in the North-west, in March (1897), the natives brought several young ones into the camp of the Calvert Expedition near the Fitzroy River.

The Magpie Lark is indeed one of the most useful of Australian birds. Dr. N. A. Cobb, the Pathologist of the Department of Agriculture of New South Wales, proved that this bird destroys numbers of a species of land molluscs that are intermediate hosts of fluke.

65.—COLLYRIOCINCLA HARMONICA, Latham.—(123)

GREY SHRIKE THRUSH.

Figure.—Gould: Birds of Australia, fol., vol. ii., p. 74

Reference.—Latham, Ind. Orn. Supp. xli.; Cat. Birds Brit. Mus., vol. iii., p. 290.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 221 (1865); North: Austn. Mus. Cat., p. 80, pl. 8, figs. 2-4 (1889)

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.



MAGPIE LARK'S NEST.

From a Photo by the Author.

Nest.—Cup-shaped, deep, constructed of strips of bark (outer); lined inside with rootlets chiefly, fine twigs and grass, and placed usually near the ground in a hollow stump, thick bush, or clump of foliage, or in a niche in a bank or ledge of rock in any timbered locality. Not unfrequently this Shrike Thrush builds into the deserted nest of some other species of bird. Dimensions over all, 6 to 7 inches by 3 to 5 inches in depth; egg cavity, $3\frac{1}{2}$ inches across by $2\frac{1}{4}$ inches deep.

Eggs.—Clutch, usually three, sometimes four, one instance of five; roundish-oval or oval in shape; texture of shell fine; surface glossy; colour, beautiful pearly-white, blotched and spotted, in some instances sparingly, with olive and dull-slate markings. Dimensions in inches of a pair: (1) $1.14 \times .86$, (2) $1.11 \times .85$: of a clutch: (1) $1.07 \times .84$, (2) $1.04 \times .84$, (3) $1.02 \times .85$. (Plate 6.)

Observations.—The specific term *harmonica* was well applied by Dr. Latham to this bird, and the name stands as a refutation against those persons who, from ignorance perhaps, say that Australia possesses no birds given to melody.

The Harmonious or Grey Thrush, as a stationary species, is commonly distributed over the greater portion of Eastern Australia, and is well represented over the rest of the Continent by one or the other of the several species. My notebook shows that I took four nests of this familiar Shrike Thrush, one at Bagshot, near Bendigo, on the 6th October, 1880, containing three eggs; two at Nhill in the Mallee, and the fourth at Dandenong Creek, 18th September, 1886, with three eggs.

I have never seen nests of the Grey Thrush like the two mentioned by Mr. Robert Hall in his notes on the "Birds of Box-hill," which were neatly lined inside with mud. I think Mr. Hall hits the right nail on the head when he says, "There is a great likeness to the nest of the introduced Thrush in this particular build." It is not at all unlikely that the native birds appropriated a nest of the English songster.

Referring to this Thrush in its South Queensland habitat, Mr. Lau remarks:—"One of our best songsters, and of plain dress, in both respects resembling the master-singer—the nightingale. The places chosen for nidification are various, namely, between the foliage of shady trees (apple, eucalypt, native mulberry, melaleuca, &c.), in a stump-hole (the remains of a standing tree), or on the ledge of protuberant bark. On one occasion one was made in a deserted Magpie Lark's nest. In general the nest is not placed high. Rootlets, dry sticks and dry grass, lined with pliable bark, compose it, wherein four eggs snugly rest.

"At Whetstone, seeing a nest over a brook in a melaleuca branch which I was unable to reach with my hand, I bent it down with a stick, and found, to my great surprise and horror, the nest filled with a carpet-snake, which had taken possession of it for a dormitory after, in all probability, swallowing the contents."

With reference to this Thrush building its nest in or upon deserted nests of other birds, Mr. James G. McDougall, of South Australia, informs me that on Yorke Peninsula old Magpie or Babblers' (*Pomatourinus*) nests are selected, which are neatly re-lined with bark.

Mr. C. French, jun., favours me with the following note:—"While on a collecting trip to Warrandyte (Upper Yarra), on November 20th, 1894, I found a nest of the Harmonious Thrush containing two fresh eggs, built into the nest of the Mountain Thrush."

Mr. J. T. Gillespie has taken clutches of eggs twice from the same Grey Thrush's nest, an unusual occurrence.

July or August to December constitute the breeding months, during which period two broods are reared.

66.—*COLLYRIOCINCLA RECTIROSTRIS*, Jardine and Selby.—(126)
C. selbii, Jardine.

WHISTLING SHRIKE THRUSH.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 77.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 291.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882); North: Austr. Mus. Cat., p. 82 (1889).

Geographical Distribution.—Tasmania, King Island, and Islands of the Furneaux Group.

Nest.—Similar to that of the Grey Shrike Thrush (*C. harmonica*), cup-shaped, deep, constructed chiefly of strips of stringy-bark, lined inside with grass, and usually situated in a hollow part of a tree or stump, or placed on the rough bark at the base of a tree; at other times in a cleft in rock. Occasionally built into the deserted nest of some other bird or into that of the Ring-tailed Opossum. Dimensions (according to Gould) over all, 5 inches; egg cavity, $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches deep.

Eggs.—Clutch, three to four; stout oval in shape; texture of shell fine; surface glossy; colour, pearly-white, in some instances having a light-yellowish tone, sparingly spotted or blotched with olive and dull slate. Dimensions in inches of a proper clutch: (1) $1.22 \times .88$, (2) $1.22 \times .86$, (3) $1.17 \times .9$.

Observations.—The Whistling Shrike Thrush, more frequently called in somewhat unpoetical terms "Whistling Dick" or "Bob Whitehead," is confined to Tasmania and some of the islands in Bass Strait, where it represents the common mainland species, *C. harmonica*.

Mr. A. E. Brent has known this Shrike Thrush to desert its nest in the course of construction after it has been inspected by him.

Breeding months September to December.

67.—COLLYRIOCINCLA BRUNNEA, Gould.—(125)

BROWN SHRIKE THRUSH.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 76.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 291

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 223 (1865); North. Austn. Mus. Cat., p. 81 (1889); Le Souëf Victorian Naturalist, vol. xvi., p. 64 (1899)

Geographical Distribution.—North-west Australia, Northern Territory, and North Queensland, also New Guinea.

Nest.—Outwardly composed of narrow strips of tea-tree (*Melaleuca*) bark, lined inside with fine twigs, and built in the upper part of a hollow stump (Gould).

Eggs.—Clutch, two to three; pearly bluish-white, spotted and blotched with markings of olive-brown and grey, the latter colour appearing as if beneath the surface of the shell; their medium length is one inch and two lines by ten lines in breadth (Gould). Dimensions in inches of two sets in Mr. D. Le Souëf's collection—(elongated ovals): (1) 1.24 × .75, (2) 1.23 × .76, (3) 1.2 × .74; (stout ovals): (1) 1.07 × .8, (2) 1.05 × .8.

Observations.—According to Gould a nest of this robust species was found (probably by Gilbert) on the 2nd February, which would be about the termination of the breeding season in the bird's northern habitat. The breeding months may be included from September to February. During the latter month (1896) a pair of these birds hatched their brood near the camp of the Calvert Expedition on the Fitzroy River, and afforded considerable amusement by the manner in which the old birds used to flutter near a dog to divert attention from their young.

Of two other and extremely doubtful species Dr Ramsay states:—“*C. superciliosa* (Masters) may be a very old bird of *C. brunnea* (Gould), and probably the same applies to *C. pallidirostris* (Sharpe).* It has a distinct broad white stripe over the eye and extending beyond it, and is a fully adult bird; the young of *C. brunnea* have a buff line over the eye.”

68.—COLLYRIOCINCLA RUFIVENTRIS, Gould.—(124)

BUFF-BELLIED SHRIKE THRUSH.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 75.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 292.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i. p. 222 (1865).

Geographical Distribution.—South, West, and North-west Australia.

Nest.—Generally placed in the hollow part of high trees, and formed of dried strips of gum-tree (*Eucalypt*) bark very closely packed; it is deep, and sometimes lined with soft grasses (Gould).

* Cat. Birds Brit. Mus., vol. iii., p. 293.

Eggs.—Clutch, three; oval in shape; texture of shell fine; surface very glossy; colour, pearly-white, heavily blotched on the apex, but sparingly elsewhere, with dark-olive and dull-slate. Very similar to those of *C. harmonica*. Dimensions in inches of a pair: (1) 1.17 × .87, (2) 1.14 × .83; odd example: 1.19 × .84.

Observations.—Although I met the Buff-bellied Shrike Thrush frequently in Western Australia, I was unable to discover a nest, but while there was thankful to receive the eggs second-hand.

Gilbert mentions that on two occasions he found the eggs of this bird in old nests of the White-browed Babbler (*Pomatorhinus superciliosus*). I suppose we are to infer the nest of the Thrush was built into the Babbler's, as in the case occasionally of the Tasmanian species building into an old home of the Ring-tailed Opossum.

Chief breeding months September to October, the season extending probably on to the end of the year.

69.—COLLYRIOCINCLA BOWERI, Ramsay.

BOWER SHRIKE THRUSH.

Reference.—Proc. Linn. Soc., N. S. Wales, vol. x, p. 244 (1885)

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland.

Nest and Eggs.—Undescribed.

Observations.—Bower Shrike Thrush is a dark and fine species—the darkest of its group—with brownish underneath parts. The original specimen was procured by the late Mr. Bowyer-Bower, near Cairns, 12th December, 1884.

70.—PINAROLESTES PARVULUS, Gould.—(127)

LITTLE SHRIKE THRUSH.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 78.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 296.

Previous Descriptions of Eggs.—Gould; Birds of Australia (1848), also Handbook, vol. i., p. 225 (1865); North; Austn. Mus. Cat., p. 81 (1889)

Geographical Distribution.—Northern Territory.

Nest.—Resembles that of *C. brunnea* in construction and for situation.

Eggs.—Clutch, two, rarely three; beautiful pearly flesh-white, regularly spotted all over with dull reddish-orange and umber-brown; like the eggs

of the other species of the genus, they are sprinkled over with bluish markings, which appear as if beneath the surface of the shell; their medium length one inch, and breadth nine lines (Gould).

Specimens in the Dobroyde collection, taken at Port Darwin, are nearly oval in form. Dimensions in inches: (1) $1.05 \times .75$, (2) $1.03 \times .72$ (North).

Observations.—This species is interesting because it is possibly the smallest of its genus, and moreover it would appear to be rare, for up to the present it has never been recorded outside the locality (Northern Territory), where Gilbert first discovered it.

A nest and eggs were brought to Gilbert by a native. They were taken from the hollow part of a tree, about four feet from the ground. The nest, which was too much injured to be preserved, was formed of small twigs and narrow strips of melaleuca bark.

71.—PINAROLESTES RUFIGASTER, Gould.—(128)

RUFOUS-BREADED SHRIKE THRUSH.

Reference.—Cat. Birds Brit. Mus., vol. iii., p. 296.

Previous Descriptions of Eggs.—Ramsay; Proc. Linn., N. S. Wales, vol. viii., p. 23 (1883); North Austn. Mus. Cat., p. 83 (1889).

Geographical Distribution.—Queensland and New South Wales.

Nest.—Cup-shaped, somewhat neat, with well-rounded rim, composed of broad portions of bark, bound with twigs and tendrils of climbing plants, mixed with greenish and brownish coloured spiders' cocoons, lined inside with very fine twigs and a few rootlets, through which the bark of the exterior or foundation is visible, and usually placed in a bushy tree. Dimensions over all, $4\frac{3}{4}$ inches by 3 inches in depth; egg cavity, $2\frac{1}{2}$ inches across by 2 inches deep.

Eggs.—Clutch, two to three; roundish oval in shape; texture of shell fine; surface very glossy; colour, beautiful pearly or warm-white, sparingly spotted and blotched with olive and warmish-grey, the majority of the markings being about the apex, and confluent in some instances. Dimensions in inches of a pair: (1) $1.01 \times .75$, (2) $1.0 \times .75$. (Plate 7.)

Observations.—Respecting this small species, on the 3rd October, 1885, I had the pleasure of taking from a bushy tree near the Fitzroy River (Q.), a nest resembling a Thickhead's, and not much larger. The bird was sitting upon a pair of fresh eggs.

Again I renewed the Little Thrush's acquaintance in the Richmond River district, New South Wales, about its most southerly limit. In Northern Queensland (about the Herbert River) it merges into a smaller race—the Lesser Rufous-breasted Thrush (*C. parvissima*).

Mr. A. J. North believes he has established an inland variety of *P. rufigaster*, describing it under the specific name *cerviniventris*. Vide "Records Australian Museum," vol. iii., p. 49 (1897).

72.—PINAROLESTES PARVISSIMA, Gould.

LESSER RUFOUS-BREASTED SHRIKE THRUSH.

Reference.—Ann. and Mag. Nat. Hist. ser. iv., vol. x., p. 114 (1872).

Previous Descriptions of Eggs.—North: Austn. Mus. Cat., p. 83, pl. 8, fig. 1 (1889), also app. (1890).

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland, also New Guinea.

Nest.—Cup-shaped, composed of broad leaves chiefly, rootlets and tendrils, with a few spiders' cocoons stuck on, lined sparingly but firmly with black-coloured rootlets, through which the leaves of the foundation are visible, and usually placed within a few feet from the ground in a lawyer-cane (*Calamus*) or other palm-like foliage. Dimensions over all, $4\frac{1}{2}$ inches by $3\frac{1}{2}$ inches in depth; egg cavity, $2\frac{3}{4}$ inches across by $2\frac{1}{4}$ inches deep.

Eggs.—Clutch, two to three; roundish oval in shape; texture of shell fine; surface very glossy; colour, pearly-white, blotched and spotted, especially about the apex, with olive and slate markings. Similar to, but usually smaller than those of *C. rufigaster*. Dimensions in inches of a pair: (1) $1.04 \times .74$, (2) $.94 \times .72$.

Observations.—It is still a matter of doubt with ornithologists whether the two varieties of little Rufous-breasted Shrike Thrushes are not really one species.

Mr. North, who has had the opportunity of examining many specimens of both varieties in the Australian and Macleayan Museums, states that *C. parvissima* differs from *C. rufigaster* in its deeper tinted plumage and smaller measurements, while the average dimensions of a number of specimens of *C. rufigaster* obtained at Wide Bay and Richmond River are length, 7.5 inches; wing, 3.9 inches; tail, 3.5 inches; bill, from forehead, 1 inch; a specimen of *C. parvissima* from Cape York measures 6.5 inches; wing, 3.7 inches; tail, 3 inches; bill, from forehead, 0.87 inch.

During his excursion in October, 1893, to Northern Queensland, Mr. D. Le Souëf found the northern race of birds numerous in the Bloomfield River district, where several nests were discovered, generally within a few feet of the ground. Mr. Le Souëf adds, the nests are not easy to find, and only discovered by seeing the bird darting off. In his series of photographs was a picture of a nest *in situ* of the Lesser Rufous-breasted Shrike Thrush, characteristically and beautifully ensconced among the hard leaves of pandanus-palm. (See illustration.)

Mr. W. B. Barnard, during his northern scrub experience, seldom found more than a pair of eggs in the nest of the Lesser Rufous-breasted Thrush, and observed that the principal breeding months were October to December.



LESSER RUFOUS SHIRIKE THRUSH'S NEST

From a Photo by D. Le Souef.



NEST OF THE ASHY FRONTED FLY ROBIN.

From a Photo by D. Le Souef.

Further north at Cape York, his brother, Mr. H. G. Barnard, during January and February, 1897, took no less than sixteen nests—eight containing two eggs each, and eight with a complement of three eggs each. Breeding season extends from September to February.

FAMILY—CAMPOPHAGIDÆ: CUCKOO SHRIKES.

73.—PTEROPODOCYS PHASIANELLA, Gould.—108)

GROUND CUCKOO SHRIKE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 59

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 22.

Previous Descriptions of Eggs—Ramsay: Proc. Linn. Soc., N. S. Wales, vol. vii., p. 47, pl. 3, fig. 1 (1882); Campbell: Southern Science Record (1882); North: Austr. Mus. Cat., pl. 9, fig. 2 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South and West Australia.

Nest.—Greatly resembles that of *Graucalus melanops*, and is placed in a similar situation on horizontal boughs; it is composed of grasses and stalks of various plants interwoven and fastened together by spiders' webs, &c., and is lined with finer grasses, &c. Inside diameter 4 inches, the depth $1\frac{1}{2}$ inches (about); the height of the rim above the branch on which it is placed is 1 inch (Ramsay).

Eggs.—Clutch, two to three; lengthened and tapering in form; texture of shell fine; surface very glossy; colour, dark warm-green or olive, usually without any distinct markings, but with the slightest washings all over, especially on the apex, of a darker shade of the same tint; others are lightly marbled or clouded all over with a chestnut tint. Dimensions in inches of a clutch: (1) $1.35 \times .88$, (2) $1.3 \times .87$; of a smaller-sized pair: (1) $1.18 \times .85$, (2) $1.14 \times .82$. (Plate 7.)

Observations.—This very fine form is essentially a dweller in interior parts, where, on the red plains of Riverina, for instance, I, with lively interest, have observed them feeding like pigeons upon the ground, hence the very descriptive name of Ground Graucalus or Cuckoo Shrike. It is a very shy bird, and when perched on a tree has an erect pose like a Bee Eater. Of the *Graucali* this bird is the only terrestrial form that came under Gould's notice either here or in the great nursery of these birds—India and the Austro-Malayan Islands. However, in Gould's day nothing was known of the nidification of the species. Dr. Ramsay described the eggs in 1882, when he was kind enough to present me with a beautiful pair. It was a coincidence that in the same year I received another pair from "Barratta," Riverina, taken by a friend, now deceased.

74.—*GRAUCALUS MELANOPS*, Latham.—(103)

BLACK-FACED CUCKOO SHRIKE.

Figure.—Gould: *Birds of Australia*, fol., vol. ii., pl. 55.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 30.

Previous Descriptions of Eggs.—Gould: *Birds of Australia* (1848), also *Handbook*, vol. 1, p. 194 (1865); North: *Austn. Mus. Cat.*, p. 74, pl. 9, fig. 4 (1889); Le Souéf: *Victorian Naturalist*, vol. xvi., p. 64 (1899).

Geographical Distribution.—Whole of Australia, also New Zealand (accidental), New Guinea, Aru Islands, Ké Islands, Amboyna, and Louisiade Archipelago.

Nest.—Very slight, shallow, composed of grass and short pieces of straight twigs wrought together with cob-webs, forming a little sack on or across the angle of a thin, forked horizontal limb. Not infrequently a dead limb is selected high in the tree. Dimensions over all, $4\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, $3\frac{1}{2}$ inches across by 1 inch deep.

Eggs.—Clutch, two to three; stout oval in shape, in some instances inclined to pyriform; texture of shell fine; surface glossy; in some cases exceedingly so; colour varies from light-green, through shades of dull-green to yellowish-olive, blotched with umber and dark reddish-brown, as well as with duller-coloured markings. Dimensions in inches of a proper clutch: (1) $1.35 \times .91$, (2) $1.28 \times .93$, (3) $1.28 \times .92$; of a small-sized pair: (1) $1.27 \times .87$, (2) $1.23 \times .9$. (Plate 7.)

Observations.—Under various trivial vernacular names, such as Blue Dove, Summer Bird, &c., the Black-faced Cuckoo Shrike is found through the length and breadth of Australia, consequently its rich green reddish-mottled eggs are beautiful ornaments in nearly every oological collection.

I well recollect the first clutch I found, which happened to be at Murrumbena, when that place consisted of bush. I have never since taken or seen such a peculiar pair for beauty.

The nest is so shallow and small, that it is rarely discovered, except when observed by the bird building or sitting thereon. In some instances Gould found the nest ornamented with the broad, white, mouse-eared lichen.

In his usual characteristic style, Mr. Hermann Lau writes:—"I first saw this bird's nest (very hard to find) January, 1864, at Allora, Dalrymple Creek, between Warwick and Toowoomba (Q.) I was anxious to procure its eggs to see what they were like. The nest hung like the bag of a Pelican in the horizontal branch of a eucalypt, high up, and as the branch was only of thin dimensions, I sent a boy up with a ladle fastened to the point of a stick, and by climbing above the nest he was able to ladle out two eggs, letting them fall in a blanket which I held below with another man, and, seeing the prize coming, by lowering gradually the blanket I secured the coveted eggs, giving the boy a shilling for his trouble. The nest, although pretty looking when in its natural place, when holding it, it collapsed in my hands. It represented a mass of spiders' web mixed with dry grass."

Mr. North mentions a nest of the Black-faced Cuckoo Shrike in the Australian Museum that is composed entirely of the dried leaves of the casuarina, securely held together by cob-webs. A nest I saw taken at "Dunbar," 11th October, 1890, was made chiefly of short, dead portions of the mid-ribs of black wattle (*Acacia*) leaves, stuck together with some glutinous matter in addition to the cob-webs. The Messrs. Brittlebank informed me that the same pair of birds built another nest and laid a second pair of eggs fourteen days after the first one was removed.

September to December or January constitute the breeding months, during which period two broods are reared.

75.—*GRAUCALUS MELANOPS* (sub-species) *PARVIROSTRIS*, Gould.—(104)

SMALL-BILLED CUCKOO SHRIKE.

Reference.—Cat. Birds Brit. Mus, vol. iv., p. 32.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883): North: Austr. Mus. Cat., p. 75 (1889).

Geographical Distribution.—Tasmania and islands in Bass Strait.

Nest.—Shallow, composed of fine, straight, dead twigs, and short pieces of bark, matted together with spiders' web, lined inside with fine twigs, and placed usually in the fork of a dead horizontal limb. Dimensions over all, 5 inches by 2 inches in depth; egg cavity, $3\frac{1}{2}$ inches across by 1 inch deep.

Eggs.—Clutch, three to four; inclined to oval in shape; texture of shell fine; surface glossy; colour, dark-green, somewhat boldly blotched, particularly on the apex, with umber of different shades. Resemble those of *G. melanops*. Dimensions in inches of a pair: (1) $1.26 \times .86$, (2) $1.25 \times .89$.

Observations.—After much attention to the mainland *Graucali*, Gould was induced to regard the Tasmanian bird as distinct.

During our expedition to several of the intermediate islands in Bass Strait, we observed what we believed to be this species.

The Small-billed Cuckoo Shrike is commonly called the "Summer-Bird" in Tasmania; why, I know not, because it is deemed a stationary species. My query in *The Australasian*, 10th June, 1899, "Does the Short-billed Cuckoo Shrike leave Tasmania or migrate during winter?" met with overwhelming evidence that the bird is stationary. Numerous correspondents from north to south in Tasmania testified they had observed the Cuckoo Shrike, usually in small flocks of about eight or ten, during winter months, notably June and July; while Mr. Erskine Dean was good enough to send me a skin of a bird shot on the 7th of the latter month at Burnie. Tasmanians, I think, may therefore safely discard the name "Summer Bird" as an inappropriate title for their local Cuckoo Shrike.

It is worthy again of remark that some of the Tasmanian birds, whether of the same species or allied forms, lay clutches with a larger complement of eggs than those do on the mainland. The Cuckoo Shrike

is an instance. Collectors in Australia never by any chance get more than three eggs to a clutch, while in Tasmania Mr. A. E. Brent says it is a common thing to take four eggs. He cites his last instance, 7th November, 1893, when he took the quartet from a nest situated in a dry fork of a gum-tree, near Mount Faulkner.

October to December comprise the principal breeding months.

76.—*GRAUCALUS HYPOLEUCUS*, Gould.—(106).

WHITE-BELLIED CUCKOO SHRIKE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 57.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 36.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N. S. Wales, vol. vii., p. 408, pl. 3, fig. 11 (1882); Campbell: Nests and Eggs, Austn. Birds, p. 11 (1883); North: Austn. Mus. Cat., pl. 9, fig. 1 (1889).

Geographical Distribution.—Northern Territory and Queensland, also New Guinea and Aru Islands.

Nest.—Like all those of the genus, a structure of wiry grasses, securely fastened together by cob-webs, and placed in a horizontal bough, usually over a forked branch; it is very shallow, having but a slight depression, just sufficient to hold the eggs, in the centre, and about 4 inches in diameter outside (Ramsay).

Eggs.—Clutch, two usually; roundish oval in shape; texture of shell fine; surface glossy; colour, beautiful warmish-green, boldly blotched or mottled with rich reddish-brown and chestnut, also with purplish-brown. Dimensions in inches of a clutch: (1) $1.04 \times .73$, (2) $1.0 \times .75$; of odd examples: (long) $1.11 \times .77$, (round) $1.05 \times .81$.

The eggs of this species are usually the smallest of the genus.

Observations.—This interesting bird is a northern species, but has been observed as far south as the Dawson River district, Central Queensland, by the Messrs. Barnard. It was to the late Mr. George Barnard I was indebted for the beautiful pair of eggs of the White-bellied Cuckoo Shrike that now grace my collection. At Coomooboolaroo, the breeding season for this species is August to October, and sometimes later.

77.—*GRAUCALUS MENTALIS*, Vigors and Horsfield.—(105)

LITTLE CUCKOO SHRIKE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 56.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 37.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882); North: Austn. Mus. Cat., p. 75, pl. 9, fig. 3 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.

Nest.—Constructed after the fashion of that of *G. melanops*, but often built into an old denuded foundation of a Grallina or Magpie Lark's nest. lined inside with pieces of very fine twigs and grass, and outwardly decorated with spiders' web, which in the case of a Grallina's old nest forms a rim about three-quarters of an inch broad round the remnant of dry mud. Dimensions over all, $4\frac{1}{2}$ inches by 1 inch deep inside.

Eggs.—Clutch, one to two, sometimes three; inclined to oval in shape; texture of shell fine; surface glossy; colour, yellowish-olive, blotched all over with rich reddish-brown or chestnut and purplish-brown. Dimensions in inches of a single example: (1) $1.18 \times .8$; of a pair with a beautiful greenish ground-colour: (1) $1.11 \times .76$, (2) $1.08 \times .76$.

Observations.—The Little or Varied Cuckoo Shrike is not uncommon in the eastern and southern States, especially in the Murray district and other Riverine localities, where they love to sport among the red-gums (eucalypts).

Many persons fall into error by confounding this species with the Black-faced variety, *G. melanops*, notwithstanding the Little Cuckoo Shrike possesses different markings and is much smaller in size. Mr. G. A. Keartland has tested the weights of the birds. He found *G. melanops* weighed $5\frac{1}{4}$ ounces, while *G. mentalis* only turned the scale at $2\frac{3}{4}$ ounces.

Mr. J. Gabriel and I noticed the nest of this Cuckoo Shrike built into the old foundation of a Grallina's in a tree growing near the river Murray, November, 1892. Mr. G. H. Morton informs me he has since confirmed this trait in the bird's economy by finding a nest with three eggs on the 28th September following in a similar position; while an intelligent observer, who went shearing the same month, near the south-western boundary of Queensland, because business was dull in Melbourne, found a Cuckoo Shrike's nest containing three eggs built into a Mud Lark's old home. If it were not the Little Cuckoo Shrike, then the Black-faced species must occasionally adopt the habit of its smaller cousin.

The breeding months generally are included from September to December.

78.—*GRAUCALUS LINEATUS*, Swainson.—(107)

G. swainsonii, Gould.

BARRED CUCKOO SHRIKE.

Figure.—Gould: Birds of Australia, fol., vol. ii, pl. 58.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 40.

Previous Descriptions of Eggs.—Le Souëf: Ibis, p. 314 (1896), also Victorian Naturalist, fig. (1896).

Geographical Distribution.—Queensland and New South Wales.

Nest.—Similar to that of other members of the genus, composed of

short twigs, &c., and spiders' web, and usually situated in the fork of a limb in forest country.

Eggs.—Clutch, two usually; in shape somewhat pointed towards one end; texture of shell comparatively fine; surface glossy; colour, dull-white, blotched and spotted, particularly on the upper quarter, where the markings form a zone, with umber and dull-coloured slate. Dimensions in inches of a clutch: (1) $1.25 \times .88$, (2) 1.2×1.86 . (Plate 7.)

Another pair resembles those of the Caterpillar Catcher (*Edoliisoma tenuirostre*), being a light-greenish tinge, and having well-rounded markings of olive and dull-slate. (1) $1.15 \times .86$, (2) $1.15 \times .85$.

Observations.—This lovely-marked Cuckoo Shrike, as far as at present known, has a somewhat limited habitat, confined to the scrubs of the eastern coastal region. My enthusiasm may be judged when, for the first time, I saw my companion (Mr. W. T. Bailey) rake with a long single-barrelled gun the top of a tall Moreton Bay fig-tree, where Regent Birds (*Scirculus*), Cat Birds (*Aeluradus*), and Fruit Pigeons (*Ptilopus*), were feasting, and bring down a pair of beautiful Barred Cuckoo Shrikes, with eyes of light lemon-coloured hue.

According to Gould, the late Mr. F. Strange shot, on the 24th November, a female containing a fully-developed egg. A similar experience befell Mr. Bailey on New Year's Day, 1892. In dissecting a female of this species, to his surprise he found an immature egg, which he described as long in form, glossy-white in colour, without trace of markings; length, about 1.2 inches by a breadth of .8 inch.

During a collecting trip to the Bloomfield River district, Northern Queensland, 1893, Mr. D. Le Souéf noticed a pair of Barred Cuckoo Shrikes that had a nest in the neighbourhood, but unfortunately it contained a pair of young ones. However, two years afterwards, Mr. Le Souéf was enabled, through the instrumentality of Mr. R. Hislop, to describe the eggs of this beautiful species from the same district. On the 12th December, 1895, Mr. Hislop found a nest containing two eggs, placed in the fork of a horizontal branch of an iron-wood (eucalypt) tree, at a height of about twenty feet from the ground. The nest was composed of casuarina needles and other leaves fastened together with spiders' webs.

Another nest was taken on the 23rd December the following season. Breeding months October to January.

79.—*EDOLIISOMA TENUIROSTRE*, Jardine.—(109)
Campephaga jardini, Ruppell.

CATERPILLAR CATCHER.

Figure—Gould; Birds of Australia, fol., vol. ii., pl. 60.

Reference—Cat. Birds Brit. Mus., vol. iv., p. 55.

Previous Descriptions of Eggs.—North: Rec. Austr. Mus., vol. i, p. 177 (1891); Campbell: Victorian Naturalist (1897).

Geographical Distribution.—Northern Territory, Queensland, New South Wales, and Victoria, also New Guinea and Aru Islands.



NEST OF THE CATERPILLAR CATCHER.

From a Photo by the Author

Nest.—Small and shallow; composed of very fine twigs, casuarina needles, and a few pieces of bark, stuck together with spiders' web, and outwardly decorated with portions of silvery-grey lichens, a few bits also being inside. It resembles that of a *Graucalus* also in its situation—a thin forked branch of a tree—eucalyptus, casuarina, or banksia. Dimensions over all, $3\frac{1}{2}$ inches; egg cavity, $2\frac{1}{4}$ inches across by $\frac{3}{4}$ inch deep. (See illustration.)

Eggs.—Clutch, one invariably; lengthened in form, with a sharp-pointed apex, like some of the Thickheads' eggs, notably *Pachycephala olivacea*; texture of shell fine; surface slightly glossy; colour, pale or light-green (the hue being more beautiful and intense when a specimen is freshly blown), spotted and blotched nearly over the whole surface with roundish markings of umber and slate. Dimensions in inches of single examples: (1) $1.34 \times .88$, (2) $1.24 \times .88$, (3) $1.2 \times .86$. (Plate 7.)

Observations.—This fine species is a northern bird. Gilbert found it extremely shy and retiring in its habits. It probably migrates down through eastern forests to different localities in Eastern Victoria, where I first saw and shot the bird, in Gippsland (October, 1881). Every summer they may be heard in the Dandenongs, near Melbourne.

Through the diligence of Mr. C. C. L. Talbot, Mr. North was enabled to describe the first authenticated nest and egg of this rare bird. During the end of September, 1882, Mr. Talbot observed a pair of the Caterpillar Catchers building their nest in an iron-bark (eucalypt), at about forty feet from the ground, on Collaroy Station, Broad Sound, 556 miles north-west of Brisbane. A week afterwards, noticing the female sitting, he climbed (a rather difficult task) to the nest and found it contained a perfectly fresh egg.

For several seasons Mr. G. E. Shepherd noticed these birds in Oliver's Gully, at the back of Mount Eliza, Mornington Peninsula. During a visit of my son and self to Mr. Shepherd, who lives near the locality, we took the opportunity of exploring the interesting gully, and were fortunate in finding the nest (the second on record) 20th November, 1896.

The nest was situated in a forked horizontal branch of a messmate (eucalypt), growing near the junction of two little gullies. The nest was about thirty feet from the ground and easy to reach. However, as Mr. Shepherd was climbing the tree, the hen, being startled, darted off her shallow nest and most unfortunately smashed the single egg, shooting it on the limb behind her. The egg was partly incubated. Great was our delight at the discovery of the nest, but our spirits fell below zero, *i.e.*, into our boots, when the only egg was broken, and we were all almost silent for the rest of the day.

We observed that the male bird possessed a song or call note resembling the pulsating sound of a large Cicada singing. The alarm notes of both male and female are a Parrot-like "tweet-tweet-tweet," or "wheet-wheet-wheet."

Besides the original nest taken on the 20th November, the same pair of birds built other two nests, one being built in a peppermint, the other in a messmate, the single eggs of which Mr. Shepherd took 2nd and 12th

December respectively. The egg taken on the latter date fell to my collection.

Mr. Shepherd disconcerted another pair of Caterpillar Catchers (*Jardine Campophages*) by taking four nests running:—(1) In a peppermint (eucalypt), the 18th December, egg much incubated; (2) in a peppermint, on 27th December (to Mr. French's collection); (3) in a banksia, on 8th January (to Mr. Le Souëf's collection); (4) in a casuarina, at a height of about twelve feet, on 19th January (to Dr. Ryan's collection). It is interesting to observe that the time taken to build and lay another egg averaged between ten and eleven days (actual intervals, twelve, ten, nine, twelve, eleven days respectively). Both birds aided in the construction of their nest.

Following Mr. Shepherd's example, Mr. S. W. Jackson, in the Clarence River district, New South Wales, the succeeding season, made a raid on the Caterpillar Catchers in his locality, and was successful in finding no less than eight nests with each a single egg, the first being found 21st November, the last 9th February. The nests were difficult to find, and still more difficult to climb to.

Mr. Jackson has thoughtfully sent me for perusal the whole of his interesting field notes pertaining to the finding of the above nests. They were all found in eucalypts, mostly blood-wood and iron-bark. Two or three times the birds removed their partially made nest after it was discovered. In one instance, although the egg was beautifully marked, it was unusually small, nearly round, and without a yolk. One pair of birds were robbed three times in succession. It was noticed that the female occasionally makes the buzzing noise like the male, usually during wet weather, and that she is fed, at all events sometimes, on the nest by her mate.

The enthusiasm of Mr. Jackson when in the field is unbounded. During one of his outings (Christmas Day, by the way), at a quarter to five in the morning, he was awakened by a male Caterpillar Catcher making his buzzing-like call in a tree leaning over the tent. Half-dressed, Mr. Jackson hurried out, leaving his companions in "the land of dreams," and in less than a minute found the nest, built about forty feet from the ground in a blood-wood, and the female sitting thereon. Returning to the tent, he aroused his sleeping companions, and before six o'clock the nest, with egg blown, were packed away. "The next move was our breakfast," naively adds Mr. Jackson.

The finding of the last nest (9th February) that season is worth recounting in Mr. Jackson's own words:—"I was not long in the gully (Watt's) when I heard the loud cluck-like note of the male bird, followed by his peculiar buzzing noise. I tracked him for a considerable time, and was just giving up all hopes of finding the nest when all at once he alighted in an iron-bark tree close to my hiding-place—a clump of small gum saplings. He flew down to a horizontal forked limb with a grub in his beak, and, before many seconds had passed, ran along the limb towards the fork, looking carefully around every few steps, and finally reaching the fork, dropped the grub and flew away. On going over to the tree, from underneath I could see a slight sign of a nest, and the tail of the hen bird

sticking over the side. I had no climbing requisites with me, so I had to scramble the tree as best I could, and a difficult task it was. However, I at last reached the nest, and took from it one beautiful fresh egg. While sitting down, resting after my climb, to my surprise I noticed both male and female birds pulling the nest to pieces."

80.—LALAGE TRICOLOR, Swainson.—(112)
Campephaga humeralis, Gould.

WHITE-SHOULDERED CATERPILLAR CATCHER.

Figure—Gould: Birds of Australia, fol., vol. ii., pl. 63.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 92.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 205 (1865); North: Austr. Mus. Cat., p. 78 (1889).

Geographical Distribution.—Whole of Australia and Tasmania (casual), also New Guinea.

Nest.—Small and shallow, loosely composed of fine stalks of plants, bark, grass, &c., with the addition of cob-webs, chiefly on the outside, and situated generally in the uppermost pronged branches of trees or saplings, sometimes on a dead horizontal branch. Dimensions of a fairly-sized nest, 3 inches over all, by 2 inches in depth; egg cavity, 2 inches across by 1 inch deep.

Eggs.—Clutch, two to three; roundish oval in form; texture of shell fine; surface glossy; colour, light or dull warmish-green, somewhat heavily blotched, especially about the apex, where the markings are confluent, with umber or reddish-brown and dull-slate. There is considerable variation in the ground-colour, which is lighter in some instances, darker in others, and frequently nearly covered with the reddish markings. Dimensions in inches of a proper clutch: (1) $\cdot 81 \times \cdot 64$, (2) $\cdot 79 \times \cdot 63$, (3) $\cdot 78 \times \cdot 65$. (Plate 7.)

Observations.—At one period or other of the year this bird is common to the whole of Australia. Its prevalence in the southern parts, however, is only noticed in summer, when it breeds, returning northward again in winter. It used to be a well-known bird to collectors years ago in the vicinity of Melbourne, where in an afternoon two or three nests might easily be detected by the bird sitting in the topmost forked branches of black wattles (*Acacia*).

The White-shouldered Caterpillar Catcher arrives at its most southerly limits about the beginning of September (I have noticed the bird in Riverina on the 1st, again at Mordialloc, Victoria, on the 19th), commencing to breed almost immediately, or by the latter end of that month. The breeding season continues into January or even February.

Both Gould and Gilbert agree that during that particular season the male birds become very pugnacious by attacking each other in a desperate

manner, or by chasing the female from tree to tree, at the same time pouring forth his sweet agreeable song.

Gilbert's remarks of the bird in Western Australia apply accurately to our own in the east—that the nest is so diminutive that it is difficult to detect (except perhaps when the bird is sitting), and so shallow in form that it is quite surprising the eggs do not roll out whenever the branch is shaken by the wind.

During the progress of the Calvert Expedition in North-west Australia, numbers of the birds in immature plumage were noticed near Lake Way, in July. Near the Fitzroy River during February they were breeding, and several clutches of eggs taken, which presented considerable variation in colour, some being heavily blotched with red on a pale-green ground, whilst others were streaked and blotched with dark-brown on a rich-green ground. The nests, which were as usual, small for the size of the birds, were built of fine grass, moss, cob-webs, and scraps of bark in the horizontal forks of the eucalypt and bauhinia trees, in such a manner as to make their discovery somewhat difficult.

From Mr. C. C. Brittlebank's observations it would appear that the male alone constructs the nest. He writes:—"Re *Camppephaga*, 17th February, 1897. Watched the male bird for over four hours in the morning, and about the same time in the afternoon, hard at work building the nest. His mate was nowhere to be seen. On the following day the same took place. This order of things continued until the nest was finished. We have observed this with three distinct pairs of birds." Although the male in his conspicuous coat of black and white sometimes sits, he rarely or never feeds the young—he builds the nest, she feeds the young—a division of labour. Have any other observers noticed this?

The illustration, "Nest of the White-shouldered Caterpillar Eater," is taken from a study in a branch of a casuarina tree.

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- 81.—*LALAGE LEUCOMELÆNA*, Vigors and Horsfield.—(110 and 111)
Camppephaga leucomela, Gould.
C. karu, Lesson.

PIED CATERPILLAR CATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pls. 61 and 62.

Reference.—Cat. Birds. Brit. Mus., vol. iv., p. 106.

Previous Descriptions of Eggs.—Fitzgerald: Proc. Linn. Soc., N.S. Wales, vol. ii., 2nd ser., p. 971 (1887)

Geographical Distribution.—Northern Territory, Queensland, and New South Wales; also New Guinea, New Ireland, and Aru Islands.

Nest.—Somewhat small and shallow, composed of a few fine twigs or portions of wire-like plants (some green) stuck together with spiders' web, mostly on the outside, which is also sometimes ornamented with bits of bark; inside lining merely a few portions of lichen or rootlets, the whole being made to resemble the forked branch where the structure is usually situated. Dimensions over all, $2\frac{1}{4}$ to 3 inches by 1 inch in depth; egg cavity, $1\frac{1}{2}$ to 2 inches across by $\frac{1}{2}$ inch deep.



NEST OF THE WHITE-SHOULDERED CATERPILLAR CATCHER.

From a Photo by the Author.

Eggs.—Clutch, one usually; inclined to an ellipse in shape; texture of shell fine; surface slightly glossy; colour, delicate light-green, blotched and spotted, especially round the apex, with umber and purplish-brown. Dimensions in inches of single examples: (1) $\cdot 96 \times \cdot 7$, (2) $\cdot 91 \times \cdot 66$. (Plate 7.)

Observations.—On account of the pied-plumaged male of this species being similar to that of the preceding bird (the White-shouldered), a little uncertainty exists amongst collectors in distinguishing the two species in the field, but if once handled and critically examined side by side there should be no further reason for confusing them.

Authors, too, went astray over the Northern Campephaga (*C. karu*), which has been proved to be an immature bird of the Pied or Black and White Caterpillar Eater (*L. leucomelana*).

The Pied Caterpillar Eater, although enjoying a northern habitat like its White-shouldered compeer, does not come further south than New South Wales, and has not been recorded for Western Australia.

The first authenticated nest with egg, discovered by Mr. R. D. Fitzgerald, was taken at Ballina, near the mouth of the Richmond River (New South Wales), 4th November, 1887. It was placed between a fork in a small branch of a tea-tree (*Melaleuca*), and contained one egg.

A beautiful egg in the collection of Dr. Charles Ryan, Melbourne, was taken by Mr. Harry Barnard at Cape York, 22nd November, 1896.

Eggs of the Pied Caterpillar Catcher have also been taken in December.

FAMILY—MUSCICAPIDÆ: FLYCATCHERS.

82.—MICRÆCA FASCINANS, Latham.—(149)

BROWN FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 93.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 123.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 260 (1865); Ramsay: Trans. Phil. Soc., N S Wales, with fig. (1865).

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.

Nest.—Slight, shallow, composed of long pieces of very fine grass covered with small shreds of bark and sometimes pieces of lichen stuck on with spiders' web, and usually situated at the extremity of a dead horizontal branch in a thin pronged fork. Dimensions over all, $2\frac{1}{2}$ to $2\frac{3}{4}$ inches by $1\frac{1}{2}$ to $1\frac{1}{2}$ inches in depth; egg cavity, $1\frac{5}{8}$ to $1\frac{7}{8}$ inches across by $\frac{3}{4}$ inch deep.

Eggs.—Clutch, usually two, rare instances three; roundish in form, more pointed at one end; texture of shell fine; surface without gloss;

colour, light greyish-blue, comparatively boldly blotched, particularly round the upper quarter, with reddish-brown or chestnut and purple. Dimensions in inches of a proper pair: (1) $\cdot 75 \times \cdot 57$, (2) $\cdot 74 \times \cdot 57$. (Plate 7.)

Observations.—The familiar Brown Flycatcher is common throughout the greater part of Eastern and Southern Australia, being represented on the north and west by a closely-allied form (*M. assimilis*).

For its graceful, active movements (especially a singular lateral movement of the tail when the bird is perched), and pleasing little song, the Brown Flycatcher is a general favourite amongst collectors. Wherever there is open forest land or, indeed, timber of any kind, the little Flycatchers are always present in pairs, and, although the nest is so small, it may be generally discovered by the solicitous actions of the owners. The Brown Flycatcher has been known to lay twice in the same nest—a somewhat unusual occurrence.

Mr. Hermann Lau, in his characteristic fashion, observes that:—“*Micræca fascinans* is a lovely little Flycatcher, always posting itself on the top of a dry stick, singing out ‘Peter-Peter’ summer and winter. Its plate-like nest (one of the smallest in Australia and disproportionate in size to the bird) rests on a horizontal dry fork five to ten feet from the ground. As the receptacle is very shallow, great care has to be taken in securing the pair of eggs, as they will fall out by the least shake (have lost several in spite of care). Once I observed the egg of *Cuculus cinereus* (*pallida*) in the nest of the Brown Flycatcher at Ellangowan, Queensland, October, 1868.”

Dr. Ramsay, in two instances in New South Wales, took the unusual number of three eggs from nests of the little Brown Flycatcher.

Two, and probably three broods are reared a season, which usually commences in October and extends to December.

In South Australia, Mr. James G. McDougall states that the Brown Flycatcher or “Post Sitter,” as he calls the bird, begins to breed September or October, laying a pair of eggs, as it does in Victoria.

83.—MICRÆCA ASSIMILIS, Gould.—(150)

LESSER BROWN FLYCATCHER.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. ii. pl. 10.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 124

Previous Description of Eggs.—Le Souéf: Ibis, p. 458 (1900)

Geographical Distribution.—West and North-west Australia, and Northern Territory.

Nest and Eggs.—See appendix.

Observations.—As Gould has pointed out, this Flycatcher is the western representative of *M. fascinans*, from which it only differs in being much smaller in size, and in having the base of the outer tail feathers brown instead of white.



YELLOW-BREASTED FLYCATCHER'S NEST

From a Photo by D. Le Souéf.



LEMON-BREASTED FLYCATCHER'S NEST.

From a Photo by D. Le Souéf.

84.—*MICRÆCA FLAVIGASTER*, Gould.—(151)

LEMON-BREASTED FLYCATCHER.

Figure—Gould: Birds of Australia, fol., vol. ii., pl. 94

Reference.—Cat. Birds Brit Mus., vol. iv. p. 126

Previous Descriptions of Eggs.—Le Souëf. Proc. Roy. Soc., Vict., vii. new ser., p. 24 (1895), also Victorian Naturalist, fig. (1896)

Geographical Distribution.—Northern Territory and North Queensland; also New Guinea.

Nest.—Extremely small and neat, composed of light-coloured fibrous material resembling bark, outwardly ornamented with pieces of silvery-grey bark, and placed in the dead horizontal forked branch of a forest tree, such as casuarina, &c. Dimensions over all, $1\frac{1}{2}$ inches by $1\frac{1}{4}$ inches in depth; egg cavity $1\frac{1}{8}$ inches across by $\frac{3}{16}$ inch deep. This is the most diminutive of all known Australian birds' nests.

Eggs.—Clutch, usually one only; oval, being more lengthened in shape than that of the southern bird, *M. fascians*; texture of shell fine; surface glossy; colour, light, warm French-grey, blotched and spotted with chestnut and purple. Dimensions of single examples: (1) $.77 \times .53$, (2) $.75 \times .53$.

Observations.—During an excursion to Cardwell, Northern Queensland, we much enjoyed the presence and delightful ditties of these dear little birds, which were fond of perching on a telegraph line or on stumps near our tents. But, for the reason, possibly, that it was too early in the season (August and September), most diligent searches failed to discover the whereabouts of their nests, then unknown to science.

However, some years subsequently the honour was left to Mr. D. Le Souëf to "officially" announce the discovery of the first nest and an egg of the Lemon-breasted Flycatcher, which he brought to Melbourne with a general collection. The nest was found in the open country, near the Bloomfield River, by Mr. Frank Hislop, but it was so small (undoubtedly the smallest nest of any Australian bird) and so similar in colour to the branch on which it was built that it was very difficult to detect, it being only noticed by seeing the bird fly off.

Mr. Le Souëf, in describing the specimens before the Royal Society of Victoria, stated:—"This little bird is found in the northern portions of Australia, generally in open forest country, and is fairly plentiful, its cheery note being often heard.

"Its beautiful little nest was found at Bloomfield, near Cooktown, on 25th October, 1893; and I secured the parent birds. It was built on the dead upper branches of a small tree, about fifteen feet from the ground, and contained one partially-incubated egg."

Mr. Le Souëf has photographed this nest, which makes a pretty couplet with the "Nest of the Yellow-breasted Flycatcher (*Macharorhynchus*)."
(See illustration.)

85.—*MICRÆCA PALLIDA*, De Vis.

PALE FLYCATCHER.

Reference.—Proc. Roy. Soc., Queensland, vol. i., p. 159 (1884).

Previous Description of Eggs.—Le Souëf : Ibis, p. 458 (1900).

Geographical Distribution.—Northern Territory and North Queensland.

Nest and Eggs.—See appendix.

Observations.—Mr. Kendall Broadbent obtained the original skin of this Pale Flycatcher, in June, 1884, at the mouth of the Norman River, in the forest country, where these birds were much addicted to perching on stumps. Mr. Broadbent has noticed that some birds of different species found in the Gulf of Carpentaria district appear "sun-burnt" or lighter in colour than those in other localities.

86.—*RHIPIDURA ALBISCAPA*, Gould.—(134)

WHITE-SHAFTED FANTAIL.

Figure.—Gould : Birds of Australia, fol., vol. ii., pl. 83

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 310.

Previous Descriptions of Eggs.—Gould : Birds of Australia (1848), also Handbook, vol. i., p. 239 (1865); North : Austr. Mus. Cat., p. 85 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.

Nest.—Neatly and marvellously made, wine-glass shaped, with the base of the stalk broken off, composed of fine dry grass, but more usually of shreds of fine bark, matted exteriorly with spiders' web, imparting to the nest a greyish appearance; lined inside with soft grass, and sometimes fine yellowish rootlets, with one or two horse-hairs added, and usually situated a few feet from the ground in warm scrub, where the nest is saddled on a naked horizontal twig (with the tail-like appendage extended underneath the twig upon which the nest is built) of a small sapling or bush, or more frequently on a branchlet overhanging a stream. Dimensions over all, $2\frac{1}{2}$ inches by $1\frac{3}{4}$ inches in depth; not including the tail-like appendage, 1 to $1\frac{1}{2}$ inches long; egg cavity, $1\frac{1}{2}$ inches across by $1\frac{1}{8}$ inches deep. (See illustration.)

Eggs.—Clutch, two to three; short oval in shape, prominently rounded at top end; texture of shell very fine; surface slightly glossy; colour, light yellowish-white, mottled and spotted, particularly about the upper quarter, with light-umber or rufous and dull-grey. Dimensions in inches of a proper clutch: (1) $\cdot67 \times \cdot48$, (2) $\cdot65 \times \cdot49$, (3) $\cdot6 \times \cdot45$. (Plate 8.)



NEST OF THE WHITE-SHAFTED FANTAIL, WITH FLOWER OF BUSH (CASSINIA).
(NATURAL SIZE).

Observations.—Generally described, this bird has the whole of its upper surface dark-grey; moon or crescent-shaped markings over the eyes and behind the ears, throat, tips of the wing coverts, margin of the secondaries white. Shafts of the tail feathers are also white (hence the vernacular name, White-shafted Fantail); under surface buff; eyes, bill, and feet black; total length, $6\frac{1}{2}$ inches (including tail, $3\frac{3}{4}$ inches).

This exceedingly tame and lively little favourite is distributed over most of the eastern part of Australia, where it is everywhere met, especially in the more heavily-forested parts. The White-shafted Fantail has closely-allied representatives in Northern Australia, Western Australia, and Tasmania; therefore it is again advised that the study of their respective habitats will greatly aid the oologist in separating the different species.

Quite a chapter might be written on this interesting and useful little Fantail and its beautifully-built, small, elegant nest—sometimes not much bigger than the bowl of a large smoking pipe—which always attracts attention, particularly the singular ornamental handle or tail that is prolonged downward from the body of the nest.

When I meditate on these wonderfully-made little nests I always think of the lines, "A Bird's Nest," which I learned at school:—

"It wins my admiration
To view the structure of that little work—
A Bird's nest. Mark it well within, without.
No tool had he that wrought; no knife to cut;
No nail to fix; no bodkin to insert;
No glue to join; his little beak was all;
And yet how nicely finished! What nice hand,
With every implement and means of art,
And twenty years' apprenticeship to boot,
Could make one such another?"—*Hurdts.*

There are various suggestions about the utility of this tail, which is constructed long or short according to the whim of the bird. If not for ornamental purposes, I believe it is a case of pure mimicry, in which the nest and tail are made to represent an excrescence on the twig, the bird sometimes having to build its nest in exposed situations where food is plentiful; but whether it be essential for the stability of the nest or the safety of its contents, the tail always takes shape early in the construction of the nest. Although the nest proper is perfect for symmetry and neatness, the termination of the tail is frequently slovenly finished off, merely a few shreds of bark hanging by spiders' webs, which any breeze might unravel. The late Mr. T. H. Potts, who gave considerable attention to the Flycatcher of this genus inhabiting New Zealand, believed the affixing of the appendage steadied the nest in exposed yet good positions for a food supply for the young. It is probably in some situations exposed to sudden draughts or gusts of wind, which, agitating the twig, might endanger the safety of the eggs. Mr. Potts asks, "Would not the resistance offered by this peculiar addition (the tail) lessen any such danger by diminishing the extent of the vibration?"

I have taken the pretty homes of the White-shafted Fantail from a variety of romantic situations. The first I ever found was overhanging

a clear purling stream that had carved for itself a narrow track through a rich alluvial flat, where tall timber grew. The nest was low down, well under the shelter of one of the banks. In the Big Scrub of New South Wales I took another beautiful nest for two purposes, firstly, to enrich my collection from that locality, and secondly because it stood right in the way between my camera lens and a picturesque waterfall I intended to photograph.

Mr. Lau writes, of the White-shafted Fantail:—"This happy little bird may be seen all over the Downs of Queensland, in the open forest as well as in the scrub; but to look for its nest you have to resort to the latter place. In the month of October you may find a receptacle—a most lovely production—the property of this Flycatcher, sometimes within reach, although oft-times ten to twenty feet high in a tree. This nest is exactly the shape of a wine-glass without the foot, manufactured out of fine dry grass connected or enclosed by spiders' web, and lined throughout with fibres or fine rootlets. A nest containing two roundish eggs was taken at Cunningham's Gap, in the Toowoomba Range, 1876. The first nest I found, however, was in 1856, at Ullandulla, New South Wales."

With regard to *R. flabellifera*, of New Zealand, a closely-allied form to the *R. albiscapa*, the following periods of time noted by Mr. Potts respecting its nidification may apply to the Australian bird, and therefore not be out of place:—On the 23rd October he found a nest with only the foundation laid. The pair of birds building had a brood of three young ones to feed, hatched from another nest not far away. 27th.—Nest apparently finished and contained one egg. 29th.—Three eggs. 14th November.—Four young hatched. 27th.—Young birds quitted their home.

Sometimes the White-shafted Fantail will pull down a partly-constructed nest and build it elsewhere for no other reason apparently than its having been seen or watched by some person.

This little bird seems to be a favourite foster-parent of the Square-tailed Cuckoo (*C. variolosus*).

The White-shafted Fantail is a late breeder. I have never taken eggs earlier than the 13th October, and have taken them as late as Christmas time. Between these periods probably two or more broods are reared.

87.—RHIPIDURA PREISSI, Cabanis.—(135)

WESTERN FANTAIL.

Reference.—Cat. Birds Brit Mus., vol. iv., p. 310

Previous Description of Eggs.—North: Proc. Linn Soc., N S Wales, vol. iii, 2nd ser., p. 414 (1888).

Geographical Distribution.—West and North-west Australia.

Nest.—Small and neat, resembling that of the eastern species (*R. albiscapa*), but somewhat smaller, composed of fine shreds of bark

felted or covered externally with light-coloured spiders' webs, lined inside with very fine grass, and saddled on a bare twig (sometimes pronged) of a sapling or bush in scrub or open forest. Dimensions over all, $2\frac{1}{4}$ inches by $1\frac{1}{4}$ inches in depth, with the addition of about 1 inch for the tail-like appendage; egg cavity, $1\frac{1}{2}$ inches across by 1 inch deep.

Eggs.—Clutch, two to three; short in shape, more largely rounded at one end; texture of shell very fine; surface slightly glossy; colour, white or faint yellowish-white, finely spotted, especially round the apex, with light-umber or rufous and dull-grey, the markings, if anything, being more spotted in character than those of the eastern form. Dimensions in inches of a pair: (1) $\cdot 59 \times \cdot 46$, (2) $\cdot 58 \times \cdot 45$.

Observations.—Among my most pleasant reminiscences of western forests is this dear little creature. The bird appeared lighter in colour than its eastern congener, *R. albiscapa*, to which it is, however, closely-allied. In fact, Gould at first regarded the two species as identical. But the western bird differs principally in the almost entire absence of the black breast-band.

Often when reclining or recording notes, or I might say listening for "notes" (bird) in the forest, my presence attracted these pretty Fantails, but whether they came out of curiosity or to catch the blow-flies that buzzed around my figure I know not. At all events, a bird would sometimes perch on a slender twig, gracefully droop its wings, spread its tail, and with meek black eyes look me full in the face. Now and again it would dart towards me, almost brushing my coat, securing each time a large fly. Its movements were so instantaneous and so close to me that I could hardly tell whether the fly was secured by the bill or by the claw, or whether it was transferred from the bill to the claw. However, every time the Fantail returned to its perch, a blow-fly was in the bird's claw, whence it was torn piecemeal and demolished. I succeeded in finding three of their prettily cob-web-felted nests, two of which were saddled on horizontal pronged twigs of karri (species of eucalypt) saplings in thick scrub. The nesting material overlapped the twig, and meeting underneath formed the usual tail. Eggs from two nests were taken 4th and 8th November respectively, but the third was not completed before I had reluctantly to leave the district. I had watched the nest in course of construction, and admired greatly the way in which the little architects moulded it into shape by one pressing its chest against the rim while sitting or turning round inside.

Breeding months are from September to December or January; generally commencing about the middle or end of October in the south-western forests.

88.—RHIPIDURA DIEMENENSIS, Sharpe.

DUSKY FANTAIL.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 311.

Previous Descriptions of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. ii., 2nd ser., p. 406 (1887).

Geographical Distribution.—Tasmania, and King, Kent, and Furneaux Islands in Bass Straits.

Nest.—Resembles that of the mainland species (*R. albiscapa*), but is more heavily built, constructed of shreds of the inner bark of eucalypts covered exteriorly with cob-webs, and neatly lined inside with the hair-like down of fern trees, reddish flowering stalks of moss, dry hair from banksia blooms, &c. Situation, generally a naked twig near the ground in a small tree or bush in the underscrub of mountain gullies or in the open forest alike.

Eggs.—Clutch, three usually, four sometimes; short in shape, with one end largely rounded; texture of shell very fine; surface slightly glossy; colour, light yellowish-buff or buffy-white, rather boldly blotched with rufous and grey in the form of a confluent belt round the apex, the markings being darker and heavier in colour than those of the bird's mainland representatives. Dimensions in inches of a pair: (1) $\cdot 62 \times \cdot 48$, (2) $\cdot 62 \times \cdot 46$.

Observations.—The Dusky Fantail is confined to Tasmania and some of the islands in Bass Strait, and, as its name implies, this bird is much darker in colour than its representative on the mainland. I succeeded in finding one of its wonderfully-constructed nests, containing two eggs, in one of the deep gullies near the base of Mount Wellington, Tasmania, on 23rd October, 1883.

It is on Mr. A. E. Brent's authority that I have stated a clutch of four eggs is occasionally laid by this species, which confirms what I have already stated elsewhere in this book, that the Tasmanian species, or representatives of the same birds inhabiting the mainland, usually lay a larger number of eggs to the clutch.

The breeding season may be included in the months from October to January.

89.—RHIPIDURA RUFIFRONS, Latham.—(136)

RUFIOUS FANTAIL.

Figure.—Gould: Birds of Australia, fol. vol. ii., pl. 84

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 319

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook i., p. 241 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1143 (1886).

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest.—Neat and beautifully formed, shaped like a wine-glass with the base of the stock broken off, composed of fine strips of bark together with moss, felted exteriorly with spiders' webs, lined inside with shreds of dark vegetable matter or grass, with usually a few red flowering stalks of moss on the bottom, and generally situated a few feet from the ground on a naked forked twig of a tree or bush near or overhanging a watercourse in the densest scrub. Dimensions over all, $2\frac{1}{2}$ inches by 2 inches in depth, with the addition of $2\frac{1}{2}$ inches for the length of the tail-like appendage; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep. Altogether larger than that of the White-shafted Fantail (*R. albicauda*). In instances the foundation of the nest appears somewhat heavy by reason of the twigs on which it is built.

Eggs.—Clutch, two usually, three occasionally; inclined to be oval or round-oval in shape; texture of shell fine; surface glossy; colour, light yellowish-buff or yellowish-white, speckled, particularly in the form of a belt round the apex, with umber and grey. Dimensions in inches of a clutch: (1) $.71 \times .5$, (2) $.7 \times .5$; of a rounder-sized pair: (1) $.67 \times .53$, (2) $.66 \times .51$. (Plate 8.)

Observations.—Not only is the forehead of this Fantail rusty-red (from which it derives its specific name, *rufifrons*), but the lower part of the back, tail coverts, and the basal half of the tail wear the same reddish colour. The remainder of the upper surface is olive-brown, while the throat is white, chest black, blending through spots into a lighter colour on the underneath parts. Eyes, bill, and feet brown, harmonising with the general tone of the plumage. About the same size as the White-shafted Fantail.

I have met with the exceedingly restless and showy Rufous Fantail on the Barnard Islands, Rockingham Bay district—probably its most northern habitat. The species is migratory, some reaching Victoria about the end of October or the beginning of November, where they love to flit up and down the cool secluded gullies of the ranges. About the end of March they move again towards their northern quarters. On the 23rd March, 1888, I noticed a bird rather out of its course under the roof of the Prince's Bridge Railway Station, Melbourne.

It was in a gully on the mountain side of the Dandenongs, one Christmas, that I found a pretty nest saddled on a sprig of a low, overhanging musk-tree. The bird was exceedingly tame, and moving its pretty head sideways, surveyed the intruder up and down. I had to tug its tail gently once or twice to remind the little creature that it was necessary, in the interests of scientific research, to quit the nest. Eventually the bird did so, revealing a pair of delicate eggs with incubation a few days old.

I again made the acquaintance of many Rufous Fantails in the dark windings of the Big Scrub, Richmond River, New South Wales, where I found two nests containing each a pair of eggs. That occurred in November, 1891.

Mr. Lau's Queensland experience of the Rufous Fantail is that "it resembles the White-shafted Fantail (but with an orange tail), also in the constructing material of its nest and colour of eggs, but the shape of the nest differs by having hardly any point underneath. Builds

invariably in low scrub bushes. Nest taken at Highfields, north-east from Toowoomba, November, 1875."

Gould states he had little opportunity of observing the Rufous Fantail during the breeding season, but he frequently found its deserted wine-glass-shaped nest, which bore a general resemblance to that of the White-shafted variety. In one of them he found a single egg, which he duly described.

Breeding months November, December and January, and in favourable seasons as late as February, Mr. B. E. Bardwell having taken eggs in the Lilydale district 18th of that month.

Mr. S. W. Moore (Sydney), took a pair of eggs of the Rufous Fantail at Westwood on the 18th January, and ten days afterwards the birds had built another nest and laid therein a set of eggs.

90.—RHIPIDURA DRYAS, Gould.—(137)

WOOD FANTAIL.

Figure.—Gould (Sharpe): Birds of New Guinea, vol. ii., pl. 32.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 322.

Geographical Distribution.—Northern Territory and North Queensland (?).

Nest and Eggs.—Undescribed.

Observations.—This bird frequents the northern parts of the Continent, and differs from the Rufous Fantail, as Gould points out, in its smaller size, in having its dark-grey tail feathers more largely tipped with white and fringed with rufous at the base only, and having the breast white, crossed by a distinct black band, and devoid of the dark spotted markings seen on the chest of its ally.

91.—RHIPIDURA SETOSA, Quoy and Gaimard.—(138)

NORTHERN FANTAIL.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 85

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 329.

Previous Descriptions of Eggs.—Rarasay † Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 411 (1886); Campbell: Victorian Naturalist (1887).

Geographical Distribution.—North-west Australia, Northern Territory, and North Queensland; also New Guinea and adjacent islands, Waigiou, New Ireland, and Duke of York Island.

Nest.—Resembles those of the other members of the genus, but, if anything, is more loosely constructed, and with a more lengthened (two or three inches) tail-like appendage hanging from beneath the little cup-shaped

structure; composed of shreds chiefly of melaleuca bark, felted outwardly with spiders' webs, and usually situated in an acacia or other tree in open forest.

Eggs.—Clutch, two; short in form, more prominently rounded at one end; texture fine; surface, slight trace of gloss; colour, dull or yellowish-white, with clouded markings of yellowish-brown and grey, especially round the upper quarter. The character of the markings appears to be more blurred compared with those of the eggs of the other members of this genus. Dimensions in inches of a pair: (1) $\cdot77 \times \cdot55$, (2) $\cdot71 \times \cdot54$; of a smaller-sized pair: (1) $\cdot69 \times \cdot52$, (2) $\cdot67 \times \cdot51$.

Observations.—Of this northern inhabitant, which is plentiful in some localities, Gilbert found a nest in the early part of November, which appeared to have been recently occupied by young birds.

A nest of this species is in the Australian Museum collection, taken at Port Darwin, 1879, but the eggs were not described till 1886.

Mr. W. B. Barnard, in a communication to me, writes:—"I am sending a specimen of this little Fantail for you to identify. It lays two eggs and always builds in the wattle (*Acacia*) tree. The eggs are very like those of the Black Fantail, only half the size. The little nest is built of cob-webs and portions of tea-tree (*Melaleuca*) bark, and finished off underneath, the point forming a tail two or three inches in length. It always builds in the forest country from the beginning of October to the end of November."

92.—RHIFIDURA ALBICAUDA, North.

WHITE-TAILED FANTAIL.

Figure.—North: Report Horn Expedition, pl. 6 (lower fig.)

Reference.—Report Horn Expedition, p. 75.

Previous Description of Eggs—North: Victorian Naturalist, vol. xvi, p. 11 (1899).

Geographical Distribution.—Central Australia.

Nest.—Similar to those of the other members of the genus.

Eggs.—Clutch, two, sometimes three (probably); roundish oval in shape; texture of shell very fine; surface glossy; colour, buffy-white, faintly spotted or mottled, especially on the larger end, with light reddish-brown and purplish-brown. Dimensions in inches: $\cdot64 \times \cdot49$.

Observations.—The White-tailed Fantail was one of the ornithological discoveries of the Horn Expedition to Central Australia.

Mr. G. A. Keartland, who collected the bird, states:—"In the Mulga scrub, on Levi Range, one of these pretty birds attracted attention. In note and habit of fluttering from branch to branch it closely resembled

R. albiscapa, but its beautiful fan-like tail, with four snow-white feathers on each side of a dark centre, rendered a closer examination necessary. Others were also shot at Petermann and Adminga Creeks."

The description of its eggs is taken from an example in Mr. Keartland's collection.

93.—RHIPIDURA PHASIANA, De Vis.

PHEASANT OR WHITE-FRONTED FANTAIL.

Reference.—Proc Roy. Soc., Queensland, vol. i, p. 158 (1884).

Geographical Distribution.—North Queensland and Northern Territory (probably).

Nest and Eggs.—Undescribed.

Observations.—The White-fronted Fantail was first collected by Mr. Kendall Broadbent, at Kimberley, near the mouth of the Norman River, Gulf of Carpentaria. It was found close to the mangroves.

94.—RHIPIDURA TRICOLOR, Vieillot.—(139 and 140) *Sauloprocta motacolloides*, Vigors and Horsfield.

BLACK-AND-WHITE FANTAIL.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 86.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 339.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 245 (1865); North: Austn. Mus. Cat., p. 88 (1889), also Trans. Roy. Soc., S.A., vol. xxii, p. 163 (1898); Le Souëf: Victorian Naturalist, vol. xvi, p. 65 (1899).

Geographical Distribution.—Australia in general, also New Guinea, Aru Islands, Solomon Islands, and New Ireland.

Nest.—Cup-shaped, neat and symmetrical, with narrow but well-built sides, composed of dried grass or fine shreds of bark, felted outwardly with spiders' webs, some of the webs being worked round and underneath the fork or branch on which the nest is placed; lined inside with finer grass, a few fibrous rootlets, feathers, hair, &c., and usually situated on the dead portion of a low horizontal branch a few feet from the ground, more frequently above water. Dimensions over all, $2\frac{3}{4}$ inches by $1\frac{3}{4}$ inches in depth; egg cavity, $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, three to four; inclined to be oval in shape, prominently rounded at one end; texture fine; surface slightly glossy; colour, light creamy-buff or yellowish-white, marked and spotted, usually faintly but



NEST OF THE BLACK AND WHITE FANTAIL

From a Photo by the Author.

sometimes boldly, with light-rufous or olive and grey, generally in the form of a belt round the upper quarter. Dimensions in inches of a full clutch: (1) $\cdot 8 \times \cdot 57$, (2) $\cdot 79 \times \cdot 59$, (3) $\cdot 79 \times \cdot 58$, (4) $\cdot 78 \times \cdot 6$; of a larger-sized pair: (1) $\cdot 82 \times \cdot 6$, (2) $\cdot 8 \times \cdot 6$. (Plate 8.)

Observations.—This bird is a simple study in black and white—the general plumage being glossy black relieved with a narrow line over either eye and abdominal parts white. Eyes, bill, and feet are black. Total length $7\frac{3}{4}$ inches, including tail $4\frac{1}{2}$ inches and bill $\frac{3}{4}$ inch.

If we include the smaller race of the north-west part of the Continent,* then the common Black-and-white Fantail is found throughout the whole of Australia.

One hardly knows where to commence the observations, which are always interesting, of this general favourite, sometimes called "Wagtail" or "Shepherd's Companion." I shall just lead off from Mr. Lau's manuscript. Writing with reference to the Darling Downs, he says:—"Queensland seems more the home than New South Wales of this lively, intrepid little customer, because, in spite of untiring search in the southern part of the last-named State, I was never rewarded with its nest, although I often met with the bird. A lover of water, it courts the friendship of the Magpie Lark (*Gallina*), often builds with it in the same tree, chases with the Magpie Lark intruders, and finds with it the sustenance of life on the margin of a rivulet. The Fantail dances on the backs of horses, cattle, or sheep, in search of parasites, also hopping in the grass before the devouring mouths of such animals, watching for frightened insects ascending from their hiding-places. When with the Magpie Lark, the situation of the nest is high; but it builds low enough, frequently over water on the top of so-called snags, on posts, &c. Once in Glenelg I knew of a nest on the stem of a vine before my bed-chamber. In passing by, the birds always greeted me, but one morning the eggs were gone. I swore revenge and laid poison in the nest, which the following morning contained the corpse of a fat lizard. The open nest is neatly formed out of decayed grass and spiders' webs, lined with fibres, and contains three or four eggs. At least three broods are reared in a season, which extends from the end of August or September to December."

I have taken these homely little birds' nests in Victoria, New South Wales, and Queensland, and never particularly noticed, as Gould states, that a living branch always overshadowed the dead branch bearing the nest. Nor have I noticed any particular predilection of the Fantail to nest near a Magpie Lark's home. On one occasion I recollect finding a Fantail's nest with eggs in a small tree growing in a lagoon, near a *Gallina*'s containing young, but there was also in the same tree a nest of the White-rumped Wood Swallow, with a set of beautiful eggs, placed within an old nest of a *Gallina*.

* I have examined the eggs of this doubtful species (*R. picta*, Gould) in Mr Keartland's collection, from the Fitzroy River district. They exactly resemble those of the common bird, being somewhat pointed in shape, texture very fine, surface glossy, colour yellowish-white, with a cloudy or indistinct belt of brownish and greyish markings about the upper quarter. Dimensions in inches (1) $\cdot 78 \times \cdot 57$; (2) $74 \times \cdot 58$

With their peculiar rattle-like noise and restless actions, the Fantails soon betray the whereabouts of their nests.

In confirmation of Gould and Mr. Lau's other remarks, that the Black-and-white Fantail sometimes rears three broods in a season, a farmer friend took particular notice of a pair near his home, and proved the fact, with the additional original information, that the first two broods, in that instance, were reared from the same nest.

A correspondent of the "Queenslander," who enjoyed opportunities of watching the Black-and-white Fantail building its nest, states:—"The site chosen for the nest is the horizontal fork of a small dead branch, generally near the top of a tall tree standing close to water. Occasionally they build in a similar position in a fallen tree, and once I saw a nest on the flat beam of a boat-house—a most unusual place. Having decided on a site, they call upon the patient and hard-working spiders, whose carefully-woven nets are torn away. The foundation is made by twisting the cob-webs around, under and across the two sides of the fork. Next a great many trips are made to the banks of the creek. Here they obtain the thread-like roots of plants, which have been exposed by the water washing away the soil. These rootlets, together with strips of soft bark, are twisted round the fork until a cup-like shape is formed, the bird helping to mould it by turning round and round within the little cup and pushing and working it with its little breast, until the neatest and most perfect cup imaginable is at last formed. Then another visit is paid to the spiders, and with some more of their webs the birds cover the outside. The webs bind the roots together, and also give the nest the exact appearance of the dead branch upon which it is placed, so that it quite resembles one of the warts or excrescences so common on our trees. No lining is needed, for the inside is quite soft."

The Black-and-white Fantail is exceedingly persevering in nest-building. The same correspondent one season noticed no less than four nests built and eggs laid therein, which were either destroyed or stolen before the birds reared a brood. In one instance they removed portions of a previous nest to construct a fresh one some distance off.

The history of a home:—"A pair of 'Shepherds' built their nest in the peach-tree by my window. They started 28th August, had one egg on the 9th September, three by the 11th, and all hatched after dinner on the 26th."—(E.D.B.).

In the Dandenong district, Victoria, the Messrs. Brittlebank and other collectors have on several occasions taken the egg of the Pallid Cuckoo (*C. pallidus*) from the nest of the Black-and-white Fantail.

In the Adelaide Museum there is a curious exhibit, a Black-and-white Fantail's nest built on the loop of a rope.

The breeding months are from September to December, and probably in some localities to January.

95.—*MYIAGRA RUBECULA*, Latham.—(144)
M. plumbea, Vigors and Horsfield.

LEADEN-COLOURED FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 89

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 373.

Previous Descriptions of Eggs.—Ramsay. Ibis, vol. i., New Ser., p. 401 (1865); Campbell: Victorian Naturalist (1887).

Geographical Distribution.—Australia in general and Tasmania; also New Guinea.

Nest.—A perfect model, neat, cup-shaped, somewhat deep, constructed of fine bark covered with cob-webs, and beautifully decorated, especially round the rim, with portions of lichen or small shields of bark, lined inside with nothing special except the fine bark. Usually situated on a dead horizontal branch of a tall tree in forest country. Dimensions over all, $2\frac{3}{4}$ to 3 inches by $1\frac{1}{2}$ to 2 inches in depth; egg cavity, $1\frac{1}{2}$ inches across by $1\frac{1}{8}$ inches deep.

Eggs.—Clutch, three; short-oval in shape, more largely rounded at one end; texture of shell fine; surface glossy; colour, whitish, blotched and spotted, in the form of a broad belt round the upper quarter, with umber and purplish or obscure grey. Dimensions in inches of a proper clutch: (1) $\cdot 75 \times \cdot 57$, (2) $\cdot 75 \times \cdot 57$, (3) $\cdot 73 \times \cdot 57$. (Plate 9.)

Observations.—At one portion or another of the year this most active Flycatcher has been observed throughout the denser timber tracts of Australia, and occasionally in Tasmania.

The general plumage of the male is a glossy leaden colour, with abdominal region white. As in the Satin Flycatcher and others of its genus, the female has the rusty-red throat and breast; bill bluish-black with black tip, eyes and feet also black.

It is a migratory species, and according to various observers appears in Northern Queensland as early as the beginning of August, reaching South Queensland, New South Wales, and other southern parts in September, and pairing, commences to breed in October. The breeding season lasts to the end of the year, even to January in Victoria, and by March the Leaden-coloured Flycatchers retrace their flight northward, the young instinctively following in the same direction.

Gould did not procure eggs of the Leaden-coloured Flycatcher, but furnishes a rough description of the nest. Dr. Ramsay states, although the bird is not so numerous during the months of November and December as when it first arrives in the vicinity of Sydney in September, still many remain to breed. They leave the closely-wooded sides of the creeks and watercourses, and show a decided preference to the more open or half-cleared land, choosing as sites for their nests the horizontal boughs of the larger trees. The nests I have observed were in the forests, in trees always too high and too difficult to obtain the eggs. The nests and eggs I first described were, together with the birds, taken by a small party of

field naturalists while encamped on the Glengarry River, Gippsland, Christmas-tide, 1885. The nest in this instance was placed on an overhanging branch of tea-tree (*Melaleuca*).

On the 20th November, 1896, Mr. G. E. Shepherd, my son, and myself were exploring a gully (locally known as Oliver's) behind Mount Eliza, Victoria, where we observed many pairs of this pretty Flycatcher. We took one beautiful nest containing three fresh eggs from a dead limb of a eucalypt, besides noticing several being built about the forest. The birds possess a plaintively sweet song.

Mr. J. T. Gillespie has kindly supplied me with a singular note concerning the nesting of a pair of Leaden-coloured Flycatchers. On the 4th December, 1898, he observed a nest building in a sapling near the Dandenong Creek, Victoria. On revisiting the spot a fortnight afterwards he found the nest deserted, and that the birds had commenced building another about one hundred yards away. A week later three pretty eggs were laid and robbed. Mr. Gillespie, on visiting the locality three weeks afterwards, or on the 15th January, to his surprise, found the original nest had been completed by the Flycatchers, and contained a pair of eggs.

96.—MYIAGRA CONCINNA, Gould.—(145)

BLUE FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 90.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 374.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 48 (1882); Campbell: Nests and Eggs Austr. Birds, p. 15 (1883).

Geographical Distribution.—North-west Australia, Northern Territory, and Queensland.

Nest.—Cup-shaped (broader at the base), neat, composed of bark, covered with spiders' webs, and ornamented with portions of lichen, sometimes with small pieces or scales of bark; lined inside with fine grass, and usually placed on a thin horizontal limb. Dimensions over all, 3 inches by 2 inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, three; short oval in shape; texture of shell fine; surface glossy; colour, dull warmish-white, with a distinct band of confluent markings of umber and purplish-grey round the upper quarter. Dimensions in inches of a clutch: (1) $\cdot69 \times \cdot49$, (2) $\cdot67 \times \cdot5$.

Observations.—This pretty little Flycatcher, with its reputed shy and retiring disposition, is a frequenter of more northern localities, but is found as far south as Central Queensland, whence birds were first collected by the Messrs. Barnard, and identified by the Australian Museum.

The eggs in my cabinet were received from the late Mr. George Barnard, of Coomooboolaroo.

97.—MYIAGRA NITIDA, Gould.—(146)

SATIN FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 91.

Reference.—Cat. Birds Brit Mus., vol. iv., p. 375

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 256 (1865), North Austr. Mus. Cat., p. 94 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, South Australia (probably), and Tasmania.

Nest.—Cup-shaped, beautifully-formed, with broad and well-rounded rim; constructed of strips of bark covered with spiders' webs, ornamented here and there with portions of lichen; lined inside with fine bark and a few rootlets, and usually situated on a dead horizontal branch of a tall eucalypt. Dimensions over all, $3\frac{1}{2}$ inches by 2 inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three, occasionally two only; short-oval in shape, having the usual Flycatcher-like form—prominently rounded at one end; texture of shell fine; surface glossy; colour, pearly-white, spotted and blotched with umber and purplish-grey in a well-defined belt round the upper quarter. Not unlike small-sized eggs of the Restless Flycatcher. Dimensions in inches of a proper clutch: (1) $\cdot77 \times \cdot59$, (2) $\cdot76 \times \cdot59$, (3) $\cdot76 \times \cdot58$. (Plate 9.)

Observations.—This lively and truly "shining" Flycatcher ranges from Cape York, in Northern Australia, to Tasmania in the south. It has been observed to remain in the first-mentioned habitat throughout the year, while the majority, moving southward, reach their insular quarters during September, arriving sometimes towards the end of the month. It departs again from Tasmania in February, passing into Queensland in March or April. It is only seen occasionally in the intermediate localities of Victoria and New South Wales.

The coat of the male Satin Flycatcher is a rich, glossy (like satin) greenish-black, with most of the under surface white; bill leaden-colour, passing into black at the point; eyes and feet also black. Total length, $6\frac{1}{2}$ inches.

The female, however, differs much by possessing a rich, rusty-red throat and breast, and the upper surface less brilliant than it appears in her mate.

In Tasmania, Gould experienced little difficulty in obtaining several nests and eggs of the Satin Flycatcher among the gullies and forest land on the north side of Mount Wellington. He says the nest is usually placed "at the extreme tip of a dead branch, at a height varying from twenty to forty feet from the ground. Some of the nests are formed of a minute species of light-green moss, others are constructed of fine threads of stringy-bark; "all are rendered very warm by a dense lining of soft hair of the opossum, the flocculent fibres of the tree-fern, and blossoms of many other kinds of plants.

"The form of the nest appears to depend upon the nature of the site upon which it is built: if placed on a level part of a branch, the nest is large and high; if in a fork, then it is a more shallow structure; in each case the opening is as perfect a circle as the nature of the materials will admit."

I fear the great naturalist has fallen into error or transposed some of his examples (probably a Robin's nest) when referring to the "dense lining" of fur. The nests I have seen are simply lined with soft bark, grass or rootlets, and in this respect resemble the nests of the other members of the genus.

A beautiful nest and eggs of the Satin Flycatcher that grace my collection were a gift (a Christmas one, by the way) from Mr. G. K. Hinsby, who enjoyed considerable nesting experiences among these Flycatchers in Tasmania. This nest was taken from a dead limb, at the height of about sixty feet from the ground in a eucalypt tree, Mr. Hinsby adding, in parenthesis, "a straight *shin* for thirty feet."

On one occasion he found no less than nine nests in an area of about half-a-mile at the junction of two creeks, above what is locally known as O'Brien's Bridge. On the morning of 16th December, 1885, Mr. Hinsby took fifteen eggs, all fresh. Although a full complement of eggs is three, only two are sometimes laid. He remembered a season in which all the nests he found of this Flycatcher contained pairs only.

The chief breeding months are October, November, and December, to which may be added January.

98.—MYIAGRA LATIROSTRIS, Gould.—(147)

BROAD-BILLED FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 92

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 381.

Previous Description of Eggs.—Le Souëf: Ibis, p. 53 (1898).

Geographical Distribution.—North-west Australia, Northern Territory, and North Queensland; also New Guinea and Aru Islands.

Nest.—Cup-shaped, somewhat shallow compared with those of the rest of the genus; constructed of fine portions and tendrils of plants, with decayed wood on the base; lined inside with curly tendrils, and attached by means of a small quantity of spiders' web to the fork of a branch. Dimensions over all, $2\frac{1}{4}$ to $2\frac{3}{4}$ inches by 2 inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $\frac{3}{4}$ inch deep.

Eggs.—Clutch, two, and possibly three; roundish oval in shape; texture of shell fine; surface glossy; colour, dull-white, spotted and blotched with umber and dull-slate, chiefly in the form of a belt round the upper quarter, leaving the apex "bald," as is usual in the *Myiagra* type of eggs. Dimensions in inches of the type clutch: (1) $.76 \times .57$, (2) $.75 \times .56$.

Observations.—This fine Flycatcher, distinguishable by its great breadth of bill, is a dweller of the northern parts of the Continent. Gilbert procured it in the Port Darwin district.

Nothing was known of its nidification until Mr. D. Le Souëf described in the "Ibis" a nest and eggs which were found by Mr. H. G. Barnard, at Cape York, on the 20th December, 1896.

The nest was built in a mangrove-tree overhanging a deep stream, and so awkwardly situated that the eggs had to be pushed into a handkerchief fixed to a long stick. When the nest was detached it unfortunately fell into the water, and was carried away by the current. Subsequently, Mr. Barnard found two other nests, but they both contained young.

The birds were not seen in open forest country, but only among the mangroves, where it was difficult to observe them on account of the surrounding quagmires.

The description of the eggs above is taken from the types in Mr. Le Souëf's collection.

99.—*MACHÆORHYNCHUS FLAVIVENTER*, Gould.—(148).

YELLOW-BREASTED FLYCATCHER.

Figure—Gould: Birds of Australia, fol., supp., pl. 11.

Reference.—Cat. Birds Brit Mus., vol. iv., p. 390.

Previous Description of Eggs.—Le Souëf: Ibis, p. 398 (1897)

Geographical Distribution.—Queensland.

Nest.—Shallow, somewhat loosely constructed of dead, short flowering stems (apparently) of plants, attached by cob-webs, in the fork of a thin, horizontal branch; lined with green material and fine curly tendrils of climbing plants. Dimensions over all, $2\frac{1}{2}$ to 3 inches by $1\frac{3}{4}$ inches in depth; egg cavity, $1\frac{1}{2}$ to $1\frac{3}{4}$ inches across by $\frac{3}{4}$ inch deep.

Eggs.—Clutch, two usually; stout oval in shape; texture of shell fine; surface glossy; colour, pure or pearly-white, very sparingly spotted, but thickest about the apex, with yellowish-red or rufous and purple. Dimensions in inches of a clutch: (1) $.71 \times .51$, (2) $.7 \times .51$; of another pair: (1) $.68 \times .51$, (2) $.66 \times .52$. These eggs are lighter-coloured and have less markings than any others known of the Australian Flycatchers. (Plate 9.)

Observations.—The gay Yellow-breasted Flycatcher is considered a denizen of Cape York Peninsula. However, it is recorded that Mr. Illridge in former years had shot the bird as far south as the Greenwood Scrub, near Brisbane.

A pretty little picture is associated with the procuring of Gould's type specimen, which Mr. James Wilcox shot at Cape York. That collector first observed it on the outskirts of a dense scrub, making short flights to snap at passing flies, then returning again to the same tree, which was the *Wormia alata* of botanists, and distinguished by its red,

paper-like bark, large glossy leaves and handsome yellow flowers, attracting numbers of insects, and vying in splendour with the colour of the bird's own handsome breast.

Dr. Ramsay, during his trip to the Rockingham Bay district, in January, 1874, wrote:—"I was delighted to find this pretty species, and secured some fine skins in time, as they had just finished breeding, and in a few days afterwards I found them moulting."

During my own camp at Cardwell, 1885, a mated pair of these beautiful Flycatchers was shot in a pocket of scrub near the tents.

At Cape York, 1896, Mr. Harry Barnard found three nests of the Yellow-breasted Flycatcher, each containing a pair of eggs, on the respective dates of the 14th, 28th, and 31st December.

These record clutches now repose respectively in the collections of Dr. Chas. Ryan, Dr. Wm. Snowball, and Mr. D. Le Souëf.

Concerning the first nest, which was figured in the "Ibis," Mr. Le Souëf states:—"Mr. H. G. Barnard found the nest and two eggs of this interesting Flycatcher on the 14th December, 1896. It is locally called the Boat-billed Flycatcher, an appropriate name. The nest was built in the fork of a thin projecting branch, and was fourteen feet from the ground. It is a shallow structure, the interior being built entirely of curly vine tendrils—a springy uneven surface for the delicate eggs. The exterior is composed of thin twigs, and the nest is fastened to the branch with cob-webs; a little of the same material is used to help to keep the outer portion of the structure together. The twigs used are the same kind as the Frill-necked Flycatcher (*A. lorcalis*) uses for her nest. The external depth is $1\frac{3}{4}$ inches, internal $\frac{1}{2}$ inch; external diameter $3\frac{1}{2}$ inches, internal $1\frac{1}{2}$ inches."

The following are Mr. Barnard's field notes concerning the other two nests:—"Nest taken 28th December, in tall tree in thick scrub, was about thirty feet from the ground on a thin bough projecting about ten feet from the main stem. Had to cut the bough through with my pocket-knife and draw it gently to me till I could reach the eggs, two in number, and perfectly fresh. Third nest taken 31st December was placed in long thin sapling, about forty feet from the ground. As the sapling would not bear my weight, I climbed a neighbouring tree and lowered myself by a thick vine till I could reach the nest, and secured two eggs, which were well incubated. This nest was also on the end of a projecting bough."

100.—*Sisura inquieta*, Latham.—141.

RESTLESS FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 87.

Reference.—Cat. Birds Brit Mus., vol. iv., p. 407.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook vol. i., p. 248 (1865); Ramsay; Trans. Phil. Soc. N. S. Wales, with fig (1865)

Geographical Distribution.—Australia in general.

Nest.—Resembles that of the Black-and-white Fantail (*Rhipidura tricolor*), but usually thinner walled and slightly larger in size; cup-shaped, composed of fine grass or fine shreds of bark matted together, and outwardly covered with spiders' webs, and occasionally ornamented with whitish cocoons; sometimes a feather or two, such as Emu's (*Dromæus*), are interwoven; lined inside with very fine fibrous rootlets and a few feathers, and placed on the dead portion of a low horizontal limb, near the extremity, often above water. Dimensions over all, 3 inches by $1\frac{3}{4}$ inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{3}{8}$ inches deep.

Eggs.—Clutch, three; short oval in shape, or largely rounded at one end; texture of shell fine; surface glossy; colour, dull or warm-white, with a distinct belt, round the upper quarter, of confluent markings of umber and dull-grey. Dimensions in inches of a pair (out of a clutch of three): (1) $\cdot83 \times \cdot61$, (2) $\cdot82 \times \cdot6$. (Plate 9.)

Observations.—The well-named Restless Flycatcher ranges throughout Australia, but is by no means so numerous as the "Wagtail," or Black-and-white Fantail.

The Restless Flycatcher is slightly larger than the Black-and-white Fantail, which it resembles, but has the whole of the under surface white, with the bill greenish-blue, passing into black towards the tip; legs and feet dark-brown.

On account of the singular grinding noise, like scissors being sharpened against a stone, which the bird sometimes emits when poised on trembling wings a few feet above the ground, it has received the vernacular name of "The Grinder."

The first nest I procured of the Restless Flycatcher was taken near the junction of the Murray and Darling rivers, 1877. The nest had, artistically interwoven, a few Emu feathers. A second nest that came under my notice was in an open forest, near Bacchus Marsh, Victoria, 9th November, 1879. It contained fully-fledged young. A third nest, in this instance building, I found during one December when lagoon-wading near the Murray. The water surrounding the tree, which was a small red-gum (eucalypt), was about three feet deep. The tree I marked or "blazed," and through the agency of a thoughtful friend, the clutch of three eggs, in due course, followed me home.

Gould observed several nests of the Restless Flycatcher in New South Wales, while Gilbert, in Western Australia, found some, remarkably neat and pretty, and formed of cob-webs, dried soft grasses, narrow strips of gum-tree (*Eucalyptus*) bark, and the soft paper-like bark of the tea-tree (*Melaleuca*), &c. They were usually lined with feathers or a fine wiry grass, and in some instances with horse-hair. Gilbert also found the bird very reluctant to leave the nest, almost suffering itself to be handled rather than desert its eggs.

Mr. Lau writes:—"The nest of the Grinder is usually high up in a tree on a bough. It was a long time before I was able to secure the eggs. Growing impatient to see how they looked, and, observing a nest high up in a eucalypt, I shot with my rifle through the nest, the eggs falling into the water. On picking up the broken shells I found they greatly

resembled those of the Shepherd's Companion (Black-and-white Fantail), only a little larger and thicker. My second bullet secured me the nest, and this also bears the same resemblance to that of the Black-and-white Fantail. The complement of eggs is three. Gowrie Junction, north of Toowoomba (Queensland), November, 1878."

In proof of Gould's statement that the Restless Flycatcher is a stationary species, I may mention that during my visit to Riverina, June, 1895, I noticed many of these birds along the watercourses; while Mr. C. C. Brittlebank, writing from Myrniong, Victoria, says, "A pair of Restless Flycatchers have been here through the winter."

Breeding months are usually from September to December.

Dr. W. Macgillivray, in his "Notes on the Birds of the Bendigo District" (1896), tells an interesting little domestic story of a pair of Restless Flycatchers. He says:—"I once had an opportunity of watching a pair of these birds building. They were uncertain for a long time as to where to place the nest; one would seem to choose a spot, and consult its mate, who would not approve. Several of these consultations were held in different trees. At last they both agreed to a spot on a horizontal limb about thirty feet from the ground, and flew off in different directions to get material. They used to work during the morning and evening, and rest for some hours at mid-day. The nest was completed in four days, and an egg laid on each of the succeeding days, till the clutch was completed."

101.—SISURA NANA, Gould.

LITTLE FLYCATCHER.

Reference—Cat. Birds Brit. Mus., vol. iv., p. 408.

Geographical Distribution.—North-west Anstralia and Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—Gould obtained his type specimen of the Little Flycatcher through Mr. Waterhouse (then at the Adelaide Museum), who received it from the Northern Territory. Any information regarding the nest and eggs of the species would be welcomed by collectors and others.

102.—ARSES KAUPI, Gould.—(143)

PIED FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., pl. 10.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 411.

Previous Description of Eggs.—Le Souéf: Ibis, p. 156 (1896)

Geographical Distribution.—Northern Territory, North (and South?) Queensland.

Nest.—Swung like a short hammock on a vine; composed of fine chocolate-coloured twigs or tendrils, fastened together with cob-webs or woven like net-work, through which daylight may be seen; ornamented outwardly with irregular-shaped pieces of silvery-grey lichen, and lined inside sparingly on the bottom with a few dark hair-like fibres or rootlets. Dimensions over all, $2\frac{1}{4}$ to $2\frac{1}{2}$ inches by $1\frac{3}{4}$ inches in depth; egg cavity, 2 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two; nearly elliptical in shape, slightly more pointed at one end; texture of shell fine; surface slightly glossy; colour, pinkish-white, spotted or freckled, more numerous on the apex, with rufous or reddish-chestnut and purplish-grey. Dimensions in inches of a clutch: (1) $\cdot 82 \times \cdot 58$, (2) $\cdot 81 \times \cdot 58$; of a smaller-sized pair: (1) $\cdot 76 \times \cdot 56$, (2) $\cdot 76 \times \cdot 55$. (Plate 9.)

Observations.—This fine Frilled Flycatcher is a dweller in the dense northern scrubs.

Up a mountain side, on Hinchinbrook Island, we enjoyed a great treat. The scrub was very dense, overgrown with vines and creepers, staghorn ferns, climbing ferns (variety of *Lomaria*), forming basket-like bunches, rare lycopodiums, and tree-orchids bedecking the stems of beautiful and (to us) strange trees, while the ground was carpeted with maiden-hair ferns of two varieties, and other graceful plants. In one dry gully was quite a garden of terrestrial orchids, botanically known as *Phajus grandifolius* and *Dipodium ensifolium*, the first-named a splendid flower about two feet high, with each stalk containing a dozen or more snapdragon-like flowers of light-purplish colours. Among such rich and romantic flora my companions (Messrs. A. and F. Coles and A. Gulliver) and I secured one pair of Pied Fantails (Kaup's). This occurred during our Cardwell camp, 1885. However, we were much too early in the season for their eggs, which were first collected by Mr. R. Hislop, in the Bloomfield River district, 3rd December, 1894, and subsequently described by Mr. D. Le Souëf in the "Ibis."

The nest was situated or suspended at the end of two hanging creepers about thirty feet from the ground. A similar nest was found, and was likewise built on creepers, at a height of about twenty feet, but it contained two young. On Mr. Le Souëf receiving another and better conditioned pair of the rare eggs (taken the 10th or 12th of the same month), the type specimens fell to my collection.

During his own visit to the Bloomfield district, 1893, Mr. Le Souëf observed that the Pied Flycatcher is peculiarly a denizen of the thick palm scrubs. Its movements are graceful, and the white frill, which appeared to be erected at will, imparts a singular appearance to the bird, and serves at once to arrest the eye of the observer. The birds, which were somewhat scarce, were generally seen either in the morning or towards evening. Mr. Le Souëf brought a skin with him to Melbourne, which differed in the nature of its pied plumage from the specimen procured at Hinchinbrook Island, and also from Gould's figure, which does not show the characteristic nuchal frill, so that I proposed, as the new scientific name for it, *terræ reginæ*. However, this will have to sink as a synonym under the original *kaupi*.

Gould, who dedicated this Flycatcher to his naturalist friend, Dr. Kaup, of Darmstadt, entertained some doubt about the propriety of placing the bird in the genus *Arses*. His doubts appear to be well-founded, because the females of the true *Arses* are dusky-brown or rufous in colour, whereas the sexes of *kaupi* seem to be alike.

The nests of this and the succeeding species, as a picture, make a rare and interesting couplet. (See illustration.)

103.—ARSES LOREALIS, De Vis.

FRILL-NECKED FLYCATCHER.

Reference—Proc. Linn. Soc., N.S. Wales, vol. x., 2nd ser., p. 171

Previous Description of Eggs.—Le Souëf: Ibis, p. 397 (1897).

Geographical Distribution.—North Queensland.

Nest.—Like a tiny hammock, slung on the bight of a creeper; composed of dark fibre and rusty-coloured portions (stems) of dead flowers, ornamented outwardly with silvery-coloured lichen stuck on with spiders' web; lined with fine, dark-brown wire-like rootlets and fibre. Dimensions over all, $2\frac{3}{4}$ inches by $2\frac{1}{2}$ to 3 inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two usually; inclined to oval in shape; texture of shell fine; surface slightly glossy; colour, delicate pinkish white, spotted and blotched, chiefly on the apex, with soft markings of pinkish-red and purple. Dimensions in inches of a proper clutch: (1) $\cdot75 \times \cdot55$, (2) $\cdot74 \times \cdot54$.

Observations.—For the addition of this new and interesting Flycatcher to our avi-fauna we have to refer to Mr. De Vis's reference, given above. The first specimen was procured by Mr. Kendall Broadbent, at Cape York, March, 1895. Its habits and haunts are similar to those of *A. kaupi*. Its nest was discovered the following year.

Mr. Le Souëf, although he has inadvertently misconstrued Mr. De Vis's nomenclature, writes:—"The nest and two eggs of this pretty Frill-necked Flycatcher were found at Somerset, Cape York, by Mr. H. G. Barnard, on December 12th, 1896. He states that 'it was found in the scrub, built between two thin vines, which hung down from the trees above, and was about thirty feet from the ground. When on the nest the birds seem very tame, almost letting one catch them before flying, though otherwise they are very shy.'"

A second nest was found by Mr. Barnard on 2nd January following. He also secured several good skins of the bird.

The nests are of singular beauty, with their ornamentation of green lichen, hanging like a tiny basket or a hammock in the scrub. A beautiful photograph, by Mr. Le Souëf, of this rare nest, found by Mr. Barnard, is reproduced in the "Ibis," July, 1897.



PIED FLYCATCHER'S NEST.



FRILL-NECKED FLYCATCHER'S NEST.

From Photos by D. Le Soint.

The eggs of both *A. kaupi* and *A. lorealis*, on account of their reddish colouring, most resemble those of the genus *Monarcha*. The two genera are probably closely allied.

104. — *PIEZORHYNCHUS NITIDUS*, Gould. — (142)

SHINING FLYCATCHER.

Figure.—Gould: Birds of Australia, fol. vol. ii., pl. 88.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 416.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 251 (1865); North: Austr. Mus. Cat. p. 90 (1889).

Geographical Distribution.—Northern Territory and North Queensland; also Aru Islands.

Nest.—Cup-shaped, somewhat large, deep, and firmly built; constructed of strips of bark, outwardly ornamented with a few portions of greyish bark and a small quantity of spiders' web; inside lined with dark or dull-coloured rootlets. Dimensions over all, $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, $2\frac{1}{4}$ inches across by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, two usually, three occasionally; of the usual Flycatcher type, prominently rounded at one end; texture of shell fine; surface glossy; colour, faint greenish-white, spotted and blotched, more particularly in the form of a belt round the upper quarter, with sepia and grey. Dimensions in inches of a full clutch: (1) $\cdot84 \times \cdot61$, (2) $\cdot82 \times \cdot6$, (3) $\cdot8 \times \cdot59$; of a pair: (1) $\cdot87 \times \cdot63$, (2) $\cdot84 \times \cdot62$. (Plate 9.)

Observations.—This Flycatcher is remarkable for its rich shining plumage of greenish-black, while the female differs by the top of her head only shining, the rest of her dress being rusty-brown, with the under surface white. Total length, $7\frac{1}{4}$ inches.

The Shining Flycatcher enjoys a northern habitat, which includes islands beyond Australia. The Herbert River is regarded as its most southern limit. During an excursion to the Cardwell district, a splendid pair of these birds was shot near our camp, in August, 1885. Two of us were one beautiful afternoon strolling along the creek in a thick pocket of scrub, when we heard a peculiar croaking noise, and soon discovered that it was uttered by a Shining Flycatcher. A half-charge of dust-shot from each barrel soon sufficed to lay male and female low. They were in perfect plumage. Both specimens now adorn our National Museum, Melbourne.

Gilbert, who first took the nest, informs us that it is either built among the mangroves or on the verge of a thicket near an open spot. Gilbert further states:—"One that I found among the mangroves was built on a seedling tree, not more than three feet from the ground; another was on a branch overhanging a small stream, within reach of the hand; while a third, constructed on the branches of the trees bordering

a clear space in the centre of a dense thicket, was at least twenty feet high. The nest at all times so closely resembles the surrounding branches that it is very difficult to detect unless the birds are very closely watched; in some instances it looks so like an excrescence of the tree, and in others is so deeply seated in the fork wherever it is placed, that it can hardly be discovered when the bird is sitting upon it."

Mr. W. B. Barnard, when in the Bloomfield River district, observed that the Shining Flycatcher built about the banks of creeks on limbs of trees overhanging the water, and that it lays about the end of December, in a nest similar to that of the Black-and-white Fantail, only half the size.

According to Mr. A. J. North, Mr. J. A. Boyd found this bird breeding early in January, 1888, on the Herbert River, Northern Queensland. The nest was built on a dead branch of a tea-tree (*Melaleuca*) that had fallen into a water-hole.

The eggs in my collection are from the Herbert River district, and resemble those of the same species taken in New Guinea and New Britain. The nest, which was on some vines overhanging water, was found on the 27th October, 1893.

105.—MONARCHA GOULDI, Gray.—(153)

SPECTACLED FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 96.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 419.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 271 (1868); North: Austr. Mus. Cat., p. 91 (1889).

Geographical Distribution.—Queensland and New South Wales.

Nest.—Nest, cup-shaped, similar to that of the Black-faced Flycatcher (*Monarcha melanopsis*), but smaller and constructed of finer materials; composed of very fine fibrous rootlets, long strings of green moss (*Hypnum*), shreds of bark, and soft silky down from seed-pods, ornamented outwardly and round the rim with beautiful moss and white cob-webs; lined inside entirely with black hair-like rootlets. Usually situated about six feet from the ground in the upright fork of a small tree in scrub. Dimensions over all, $2\frac{1}{2}$ inches by $3\frac{1}{2}$ inches in depth; egg cavity, $1\frac{1}{4}$ inches deep (Ramsay).

Eggs.—Clutch, two; roundish oval in shape; texture of shell fine; surface glossy; colour, pinkish-white, minutely freckled all over (thickest on the larger end, where some of the markings are inclined to small blotches) with rich pinkish or reddish-brown and dull-purple. Dimensions in inches of a proper pair: (1) $.84 \times .64$, (2) $.84 \times .63$.

Observations.—The eggs of this interesting Flycatcher in my collection with its beautifully-constructed nest, were taken in the Clarence River district of New South Wales, the same district where Mr. J. Macgillivray discovered the original nest and eggs from which Dr. E. P. Ramsay took his descriptions.

106.—MONARCHA GOULDI, Gray.
M. albiventris, Gould.

WHITE-BELLIED FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., supp., pl. 13.

Reference.—Gray, P.Z.S., 1860, p. 352; Gould, P.Z.S., 1866, p. 217.

Previous Descriptions of Eggs.—Gould: Birds of Australia, fol., supp. (1869); Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i. p. 1144 (1886); Le Souëf: Proc. Roy. Soc. Victoria, new ser., vol. vii., p. 21 (1895).

Geographical Distribution.—Northern Territory and North Queensland.

Nest.—Cup-shaped, remarkable for its beauty and singular appearance, composed of brownish shreds of palm fibre and skeleton leaves, curiously decorated outwardly with white cocoons and green ones mixed; lined inside with black hair-like fibre in addition to one or two long twigs, and usually fastened (somewhat loosely) to the thin, upright prongs of a branch, something after the fashion of a Reed Warbler's (*Acrocephalus australis*), in the scrub. Dimensions over all, 2 $\frac{3}{4}$ inches by 3 inches in depth; egg cavity, 2 inches across by 1 $\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three; inclined to oval in shape; texture of shell fine; surface glossy; colour, warm-white, spotted and blotched sometimes boldly with pinkish-red or reddish-chestnut and purple. Dimensions in inches of a clutch: (1) $\cdot 82 \times \cdot 58$, (2) $\cdot 8 \times \cdot 57$. Similar to those of *P. gouldi*, but slightly smaller, and markings not quite so numerous. (Plate 9.)

Observations.—There has been some difference of opinion among ornithologists whether the White-bellied Flycatcher is identical or not with the Spectacled Flycatcher. I think it is separate, and that Gould's original diagnostic description is correct. *M. albiventris*, besides being a little smaller than the southern bird (*M. gouldi*), say from New South Wales, "is distinguished for the pure whiteness of the under surface of its body, its axillaries, and the under side of the wings; whereas, in the south-eastern species, the chestnut colouring of the breast is continued down the entire length of the flanks over the under surface of the wings, and on the axillaries also in very old specimens." For other opinions about these birds, students may refer to Dr. Ramsay (Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1144), and Dr. Sharpe ("Voyage of the Alert," p. 14).

Mr. D. Le Souëf, who personally collected the nests of the White-bellied Flycatcher in Northern Queensland, and from whom I received my eggs, states:—"These Flycatchers were seen only in the scrub, and were very shy birds. All the nests we found were built near the top of slender young trees, about four feet from the ground, and always near a water-course; their pretty cup-shaped nests were, comparatively speaking, easily seen; they were outwardly composed of fine shreds of bark, pieces of skeleton

leaves, a little moss, and all round the nests were fastened pieces of white spider cocoons and a few of the softer green-coloured cocoons made by other varieties of spiders. They gave the nests a curious appearance. All the inside was lined with very fine black rootlets and tendrils, having the appearance of horse-hair."

Gould received his information (and possibly specimens of the birds) from Mr. James Cockerill, the collector, who stated that the bird is abundantly dispersed over the Cape York Peninsula, where it is a stationary species, breeding on the edge of the scrubs. Mr. Cockerill also secured the eggs for Gould, which the latter described.

There is no doubt that this fine Flycatcher is numerous in that region, because Mr. Harry Barnard took there, at the end of January, 1897, no less than thirteen nests, each containing a pair of eggs. He also took a nest as late as March, with two eggs.

Breeding season October to March. The Doctors of the British Museum have placed this and similar species under the genus *Piezorhynchus*, but if the study of oology be taken into account, I think they should have been retained under Gould's classification, *Monarcha*. Moreover the eggs of *Piezorhynchus nitidus* are totally different from those of either *M. melanops*, *M. gouldi*, or *M. albiventris*.

107.—MONARCHA LEUCOTIS, Gould.—(154)

WHITE-EARED FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., supp., pl. 12.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 423.

Geographical Distribution.—Queensland and New South Wales; also Louisiade Archipelago.

Nest and Eggs.—Undescribed.

Observations.—The original specimen of the White-eared Flycatcher was secured by the naturalist, Macgillivray, who obtained it at Dunk Island, Rockingham Bay. A second specimen was procured by him at Cape York.

The discovery of the nest and eggs of this rare Flycatcher is looked forward to by collectors with more than ordinary interest.

108.—MONARCHA MELANOPSIS, Vieillot.—(152)

BLACK-FACED FLYCATCHER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 95.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 430.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 302 (1865); North Austr. Mus. Cat., pl. 9, fig. 9 (1889).

Geographical Distribution.—Northern Territory, Queensland, New South Wales, and Victoria; also New Guinea.

Nest.—Cup-shaped, deep, extremely beautiful, constructed outwardly entirely of green hair-like mosses of two varieties; lined inside with dark-brown wire-like rootlets, and usually securely built into a three-pronged upright fork, about six or eight feet from the ground, in thick scrub. Dimensions over all, 3 inches by 4 to 5 inches in depth; egg cavity, 2 inches across by 2 inches deep.

Eggs.—Clutch, two to three; inclined to be pyriform, or oval in shape; texture of shell fine; surface glossy; colour, warm-white, freckled, especially round the upper quarter, with pinkish-red and purple. Dimensions of a proper clutch: (1) $\cdot99 \times \cdot68$, (2) $\cdot94 \times \cdot67$, (3) $\cdot94 \times \cdot66$; of a smaller-sized pair: (1) $\cdot93 \times \cdot64$, (2) $\cdot93 \times \cdot64$.

Observations.—The Carinated, or as we may call it, the Black-faced Flycatcher, is readily identified by its intensely black face, which matches a grey coat, chestnut-coloured chest, and white abdomen. The length of the bird is about that of the Shining Flycatcher.

This exceedingly fine Flycatcher is migratory, its habitat extending from Northern Australia down the eastern coastal region to Victoria, where the birds have been shot in Gippsland, while a specimen has been noticed as far west as the Upper Werribee district.

The Black-faced Flycatcher, of course, winters in its most northerly habitat, moving southward in August and September, returning about March or April.

Dr. Ramsay writes:—"I have never myself had the pleasure of finding the nest of this beautiful species, but perhaps the fact that very few breed about Sydney may be sufficient for this seeming neglect. For the nest and eggs which at present grace my collection I am indebted to Mr. George Masters, who procured them during a visit to Kiama, in January, 1864. The only instance I know of this bird's breeding in the vicinity of Sydney was in December, 1860, when I observed a pair accompanied by two young ones scarcely able to fly."

Mr. Lau says of the Black-faced Flycatcher, or "Mask Bird," that it is "a good-looking bird, belonging to the jungle scrub, and not unlike *Pachycephalus rufiventris*, at first appearance, the fore part of the head being black, hence the name. The handsome shape of the nest and place is very conspicuous, about six feet from the ground. The green mossy cup is held by three branching stems, just like that of the Reed Warbler upon reed stems, and is also about the same size. The interior is adorned by black fibres gathered from fern-trees, and wherein are placed three eggs, rather glossy-white, with fine pink spots.—Cunningham Gap, Toowoomba Range (Q.), October, 1876."

Mr. Kendall Broadbent has also met with this Flycatcher breeding on the Darling Downs, at Gowrie Creek; while of late, several of their lovely moss-made nests and finely-speckled eggs have been collected in the Richmond and Clarence districts of New South Wales, where, according to Mr. S. W. Jackson's observations, these pretty birds are frequently seen in the open forest country near a dense scrub; but they seem to prefer the scrubs, because he has never found their nests elsewhere. The birds generally build in the top fork of some small sapling, at an altitude varying from five to thirty feet.

Mr. Jackson continues:—"During my rambles in the scrubs in the Clarence River district, I have found thirteen clutches of these eggs; I remember one day finding three sets and two more new nests. The eggs vary a little in their shape, size, and markings, but not to any great extent. These birds love to decorate their nests with beautiful green moss, and thus render them more difficult to find. The cry or note of the male bird is peculiar, for he says, 'Give us a chew,' and I always answer, 'yes, you show me the nest, and I shall give you a chew (of tobacco).'"

Breeding months October to January.

109.—MONARCHA CANESCENS, Salvadori .

PEARLY FLYCATCHER.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 431.

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—This Flycatcher takes its name from the general colour of its upper surface—light, pearly grey. The bird has not been found outside the Cape York Peninsula, where Salvadori's type specimen (a male) was obtained.

110.—PETRÆCA LEGGII, Sharpe.—(165)

SCARLET-BREADED ROBIN.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 165.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. 1., p. 280 (1865); North: Austr. Mus. Cat., p. 102 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia, and Tasmania.

Nest.—Cup-shaped, neat and beautiful; constructed of soft bark, covered with pieces of outer bark stuck on by spiders' web so as to resemble the limb on which the nest is placed; lined inside with fine inner bark and finished warmly with fur, sometimes a feather or two in addition. Usually situated in the strong, upright, forked branch of a sapling or small tree in a retired locality in open forest. Occasionally the nest is placed in the hollow part of a tree trunk. Dimensions over all, 3 inches by 3 inches in depth; egg cavity, $1\frac{1}{2}$ inches across by $1\frac{3}{8}$ inches deep.



SCARLET-BREASTED ROBIN'S NEST.

From a Photo by the Author.

Eggs.—Clutch, three to four; roundish in shape, but more pointed at one end; texture of shell fine; surface slightly glossy; colour, light greenish-white, much spotted and speckled, especially round the upper quarter, with amber and dull-grey. Dimensions in inches of a proper clutch: (1) $\cdot 72 \times \cdot 58$, (2) $\cdot 72 \times \cdot 58$, (3) $\cdot 71 \times \cdot 56$. (Plate 8.)

Observations.—This lovely-feathered forest gem is a great favourite with collectors, and is fairly distributed from South Queensland round to South Australia, its place being taken in Western Australia by an allied species, *P. campbelli* (Sharpe).

The dress of the Scarlet-breasted Robin is—upper surface, including throat and head, black, excepting conspicuous patch of white on forehead, and longitudinal white bands on the wings; breast and upper part of abdomen scarlet, rest of under surface white. Length, $4\frac{1}{2}$ inches; wing, $2\frac{1}{4}$ inches; tail, 2 inches; bill, $\frac{5}{8}$ inch. The plumage of the female is brownish, the breast sometimes being tinged with red.

One never forgets one's enthusiasm over the finding of the first Robin's nest. I well recollect my first find, which happened to be a nest of the Scarlet-breasted species, that I discovered, with the hen bird sitting, in the forked branch of a "manna-gum" (*Eucalyptus*), that grew in a secluded part of a bush paddock not far from what is now Murrumbena, Victoria.

Mr. A. J. North writes:—"On the partially cleared land in the dense forest of South Gippsland (Victoria) I have often found the nest of this species by seeing the bird fly into one of the huge, blackened, hollow trunks of eucalyptus, that has been destroyed by fire. The nest is placed about six or seven feet from the ground, on a projecting piece of roughened and charred wood; it is composed of strips of bark, grasses, and mosses, securely held together by cob-webs, and lined with hair, fur, feathers, &c., and sometimes with the soft downy fibre of the inner bark of the tree-fern (*Dicksonia antarctica*)."

The Scarlet Robin's nest, for appearance and situation, is always a picture, but one remarkably so was first brought under my notice by my friend Mr. J. Gabriel. It was in a cleft in a small dead musk-tree (*Olearia*) stem. A length of about fifteen inches, containing the nest, was sawn off, and made a most beautiful photograph (see illustration). The interesting exhibit was afterwards presented to the Australian Museum, Sydney, where it has been set up with the instructive and artistic "bird groups."

I have found the egg of the Narrow-billed Bronze Cuckoo (*C. basalix*) in the nest of the Scarlet-breasted Robin.

Gould states this Robin usually rears two or three broods in a year, the period of nidification commencing in August, and ending in February; but we may infer that the chief breeding months are from October to December.

111.—PETRECA CAMPBELLI, Sharpe.

WESTERN SCARLET-BREASTED ROBIN.

Reference.—Ibis, p. 303 (1899).

Previous Description of Eggs.—Le Souéf: Ibis, p. 458 (1900).

Geographical Distribution.—West Australia.

Nest and Eggs.—Undescribed, but in all probability similar to those of *P. legyii*. (See appendix.)

Observations.—Upon my return from a collecting tour in Western Australia, 1890, I forwarded to the British Museum a few birds' skins for identification. Among them was a male Scarlet Robin which I shot in the vicinity of Albany—this Dr. Sharpe has separated from the eastern form, from which it differs in minor points, chiefly in the smallness of the white cap upon the forehead and there being less white on the wings, under the specific name of *campbelli*. The aboriginal name is "goo-ba." Gould himself pointed out that a slight difference existed in the depth of colouring of specimens of Scarlet Robins from the western and eastern coasts, those of the former, particularly the females, having the scarlet more brilliant and to a greater extent than those from New South Wales and Tasmania.

In Western Australia I also saw a curious *lusus naturæ* of the Scarlet-breasted Robin. The breast remained red, but the rest of the plumage was pure white, except a brown feather or two on the shoulders. The bill and feet were oddly and conspicuously black.

112.—PETRECA PHENICEA, Gould.—(167)

FLAME-BREASTED ROBIN.

Figure—Gould: Birds of Australia, fol., vol. iii., pl. 6.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 166.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 282 (1865); North: Aust. Mus. Cat., p. 104 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia, Tasmania, and intermediate islands in Bass Strait.

Nest.—Cup-shaped, soft and pliable; composed of grass and very fine, dark, thread-like roots of plants, coated outwardly with patches of spiders' web of soiled appearance; lined inside with fine grass and rootlets with other soft vegetable matter on the bottom. Usually situated in the hollow of a tree, cleft of rock, or on an abrupt bank of a creek in retired localities. Dimensions over all, $3\frac{1}{2}$ to 4 inches by $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three, occasionally four; inclined to oval in form; texture of shell fine; surface without gloss; colour, warm bluish or

greenish-white, spotted, and sometimes boldly blotched, more particularly round the apex, with amber and dull grey. Dimensions in inches of a proper clutch: (1) $\cdot 76 \times \cdot 56$, (2) $\cdot 75 \times \cdot 56$, (3) $\cdot 75 \times \cdot 56$.

Observations.—The Flame-breasted Robin is well named, for its throat and breast, more especially in the breeding season, seem aflame with rich scarlet. The rest of the plumage is smoky or sooty-grey, except a small spot on the forehead, a longitudinal patch on each wing, and the under tail coverts, which are white. The female possesses a brownish coat, with greyish under surface.

The range of this splendid Robin extends from South Queensland, where a few individuals have been noted, to South Australia and Tasmania, and the greatest number are found, during the breeding season at all events, in Tasmania, including many of the islands in Bass Strait.

On the mainland, on a dewy April morning, after the first autumnal rains, these Robins appear. How their breasts of flame shine out against the dark clods of newly-ploughed fields! In our cities they may be seen perched on a fence or clothes-line.

Mr. J. Burton, on the schooner *Gratitude*, when five or six miles off the land, between Wilson's Promontory and Cape Schanck, 21st April, 1896, noticed several (about six) Flame-breasted Robins flying, some of which alighted on the rigging of the vessel. No doubt the little birds were making a voyage from some of the islands to the mainland.

On the 27th April, 1895, I watched, for a considerable time, a pair (male and female) of early birds hunting for insects in the rear of our premises, darting from the ground to the clothes line and thence to the fence, and so on, all the while chirping and chattering, as if to themselves, in their enjoyment.

On the approach of spring (September) they all disappear as mysteriously as they arrive. They, no doubt, go to their breeding haunts, which would seem to be chiefly Tasmania and the intermediate romantic islands, where they love to nest by the sound of the wind and waves. A few remain on the mainland, or retire to breed on the uplands of the great Dividing Range and adjacent spurs.

The talented author of the Australian Museum "Catalogue of Nests and Eggs" will, perhaps, pardon me for saying that the nest and eggs he received and described from the Mallee country need more authentic proof. Moreover, it would be easy to mistake a female Scarlet-breasted Robin (to which species Mr. North's nest and eggs appear to belong) for a female Flame Robin.

The late Mr. F. W. Andrews, in the Proceedings of the Royal Society of South Australia, vol. vi. (1883), infers he has seen the Flame-breasted Robin breeding in South Australia, but he most unfortunately discounts the value of the statement by saying, "The peculiar feature in the habits of these birds is, when they have reared their young, say six or eight weeks after their arrival (in April or May, as the case may be),* they make off again, and are no more seen until the following season." This means, if I mistake not, that the Robins breed during mid-winter, which is scarcely correct.

* The words in parentheses are mine.

However, I have mentioned that the Flame-breasted Robins occasionally breed on the mainland. Mr. I. W. De Lany informs me they breed in the Alpine region of the Omeo district, above the 3,000 feet level. Mr. De Lany kindly sent me a male bird for identification. He has noticed that these Robins moult in December and January, and that immediately afterwards the young males have donned their flaming scarlet breast.

In the tall timber on the summit of the Dandenongs, my son and Mr. Christie Smart noticed two pairs of Flame Robins on the 20th November (1897). One pair was apparently feeding young in a nest. A bird was shot for identification and for the collection, not, however, of the pair belonging to the nest.

In all my lengthened experiences afield during the nesting season I never found a nest of the Flame Robin, nor do I recollect seeing one found on the mainland; but as soon as I visited Tasmania and the adjacent Islands, I found the birds in evidence at once, and nesting.

During the three expeditions of the Field Naturalists' Club of Victoria, viz., to King Island, Kent Group, and Furneaux Group, Flame-breasted Robins were identified in each place, while nests and eggs were procured in the two first-mentioned localities. Especially on Kent Group did we enjoy the presence of these homely and pretty birds round about our camp. Right merrily did they cheer us, especially at early morn, with their antiphonal singing, so to speak, rapidly answering each other from tree-top to tree-top, or from rocky eminence to grassy bank. Several nests, with eggs or young, were observed either placed on a bank or in low timber. A photograph taken represented a nest cleft in the side of a blue-gum (eucalypt) tree, a few feet from the ground. (See illustration.)

Breeding months, end of September to December.

113.—PETRECA RHODINOASTRA, Draper. —(163)

PINK-BREASTED ROBIN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 1.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 170.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 276 (1865).

Geographical Distribution.—Victoria, South Australia, Tasmania, King Island, and Flinders Island.

Nest.—Cup-shaped, well-built, very beautiful and soft; composed of green moss and decorated outwardly with lichen and spiders' web; lined inside with fine moss and brown hair-like substance gathered from fern fronds, sometimes with fur. Usually placed in a mossy, forked branch of some small tree in the dense scrub of gullies, or innermost recesses of heavy forest. Dimensions over all, 3 inches by 2 $\frac{3}{4}$ inches in depth; egg cavity, 1 $\frac{1}{2}$ inches across by 1 $\frac{1}{4}$ inches deep.



FLAME-BREASTED ROBIN'S NEST.

From a Photo by the Author.



GREY-BREASTED SHRIKE ROBIN'S NEST

From a Photo by the Author.

Eggs.—Clutch, three, occasionally four; round oval in shape, or more pointed at one end; texture of shell fine; surface slightly glossy; colour, delicate greenish-white, spotted, particularly in the form of a broad belt about the upper quarter, with umber and grey. Dimensions in inches of a pair: (1) $\cdot 71 \times \cdot 53$, (2) $\cdot 71 \times \cdot 53$; of a proper clutch: (1) $\cdot 76 \times \cdot 58$, (2), $76 \times \cdot 57$, (3) $\cdot 74 \times \cdot 58$.

Observations.—All the beauty and adornment are usually found in male Robins, the females being plain, wee bodies in grey or drab dresses. The male Pink-breasted Robin on throat, head, and upper surface is soft black, with a brownish shade on the wings; breast and abdomen pink, passing into white on the vent and under tail coverts. There is a small white spot in the centre of the forehead, while, as in nearly all Robins, the lustrous eyes are dark, with bill and legs to match. Total length, $4\frac{3}{4}$ inches; wing, $2\frac{5}{8}$ inches; tail, $2\frac{1}{4}$ inches; bill, $\frac{9}{16}$ inch.

The lovely Pink-breasted Robin, with its delicate nature and disposition, prefers to dwell in the "dim religious light" of heavy forest solitudes. It may also be found in the dark shade of a gully, or in "some secret glen, secluded from the sun," in more open timbered country. Its geographical range is more southern than its compeer, the Rose-breasted Robin, being limited to Victoria and South Australia, with insular quarters in Tasmania and on some of the larger intermediate islands in Bass Strait, notably King Island and Flinders Island.

A nest with eggs which I received from Mr. G. K. Hinsby, Tasmania, was taken by that collector in one of the gullies under Mount Wellington, near where Gould procured his types both of birds and eggs.

The Pink-breasted Robin has been mentioned somewhat prominently on two occasions in connection with expeditions of the Field Naturalists' Club of Victoria. First, the Yarra Falls' trip, when a nest and male bird were procured in the shades of a beech forest near that out-of-the-way locality, the eggs being the first authenticated examples taken on the mainland. And again, in connection with the ascent of Mount Strzelecki, Flinders Island, when a Pink Robin was noted in a dewy fern-tree gully near the summit of that double-headed peak.

On the authority of Mr. A. E. Brent, I state the Pink Robin lays four eggs occasionally in Tasmania. Mr. Brent informs me he has taken three nests containing each a quartet, and particularises one—the last—when he took a beautifully-made nest from the fork of a musk-tree, on the 15th October, 1894.

Usual breeding months October to December.

114 -- PETRECA ROSEA, Gould. —(164)

ROSE-BREASTED ROBIN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 2.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 170.

Previous Descriptions of Eggs.—North: Victorian Naturalist (1896),
Campbell: Geelong Naturalist (1896).

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest.—Resembles that of the Pink-breasted Robin (*P. rhodinogastra*); cup-shaped, neat, beautiful; thick-walled, with well-rounded rim; composed of fine, greenish moss, covered outwardly, including the rim, with pieces of silvery-green lichen, stuck by means of spiders' web; lined inside with a good ply of the brownish, soft, hair-like material off fern fronds, fur, &c.; usually placed in the fork of a hazel, musk, or such like tree near a stream in secluded forest retreats. Dimensions over all, $2\frac{3}{4}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, three; roundish in shape; shell exceedingly thin; surface without gloss; colour, warm greenish-white, spotted and blotched with brownish and dull-purplish markings, especially about the upper quarter. Most resemble those of the Flame-breasted Robin (*P. phænicea*) but smaller. Dimensions in inches out of a clutch of three: (1) $\cdot65 \times \cdot55$, (2) $\cdot62 \times \cdot51$; of a full clutch: (1) $\cdot68 \times \cdot53$, (2) $\cdot68 \times \cdot53$, (3) $\cdot67 \times \cdot53$. (Plate 8.)

Observations.—Compared with the Pink Robin, the Rose Robin has a lighter-coloured coat of slaty-grey, while the breast is rich rose-red. It was somewhat remarkable that the nest and eggs of the lovely Rose-breasted Robin remained undiscovered for so many years. These birds are fairly plentiful in the forests or scrubs of the eastern coastal region from Rockingham Bay district down to the Cape Otway forest, Victoria.

However, in Victoria the movements of the Rose Robins appear to be migratory. According to the observations of my correspondent Mr. I. W. De Lany, who is a good field and forest observer, these Robins arrive in Gippsland (notably Omeo and Jumbunna districts) about the end of September, leaving again for more northern quarters during April.

Apparently all the Rose Robins do not migrate, for during my excursion to the Big Scrub, Richmond River, New South Wales, in November, 1891, I heard the delightful little songs of several of these birds among the leafy rafters of the scrub; while Dr. Ramsay, during his North Queensland trip, wrote:—"One pair (of Rose Robins) noticed on the margin of dense scrub: although frequently watched for hours, no nest was discovered."

Events proved that Rose Robins had been actually breeding nearer Melbourne than had been supposed by collectors, and were believed to be the Pink-breasted species, which they greatly resemble, and for which the Rose-breasted birds may be easily mistaken in the bush unless shot and handled. Mr. J. Gabriel "sprang a mine" on local collectors (including himself) by obtaining a pair of birds, together with their nest and eggs, and forwarding them to the Australian Museum, Sydney, where they were pronounced and described as the Rose-breasted Robins.

I had been working further afield, and the same season obtained, through the goodness of Mr. De Lany, an authenticated nest and eggs, also a skin of the dear little Robin, taken at Wombat Creek, in the Glen Wills district (Victoria).

Mr. De Lany observed that these Robins take their food while on the wing, much after the fashion of Fantails and Flycatchers, and that the female bird only sits, being fed on the nest by the male.



ROSE-BREASTED ROBIN'S NEST

From a Photo by the Author.

Of all the beautiful lichen-bedecked, moss-made nests of Australian birds, I give the preference for perfection to that of the Rose-breasted Robin. Perhaps I am biased by the romantic places and situations where the bird usually builds. The first nest I chanced to find, in the end of October, 1888 (but I then thought it belonged to its cousin, the Pink-breasted Robin), was nearly ready for eggs, and was situated in a mossy fork of a fragrant musk-tree in a shady forest nook of the Dandenongs. After visiting the locality for three successive weeks, I was tempted to bring the nest to Melbourne without the eggs, the birds evidently having deserted their pretty home, perhaps on account of my wanton (to them) inquisitiveness, which was fortunate for them, for had there been eggs, I intended shooting a bird for identification. A second nest, discovered one Christmas-tide, was an equally beautiful one, but larger outwardly, and was placed within reach, on an overhanging branch bearded with beautiful moss, of an aromatic-barked sassafras, which grew by a stream in the very heart of the forest. Again I was disappointed, for, although the nest was perfectly new and the owners near, there were no eggs.

When the Government of the day in its wisdom decided to throw open the crown of the Dandenongs for a village settlement—in other words, to barter away a glorious heritage of the people of Melbourne when more suitable localities might have been chosen elsewhere—the sacred forest was soon ravished by the woodman's axe, and despoiled by fire, and the "fern-matted streams" polluted. Amid the general destruction it would be little use to say "woodman spare that tree," but my friend, Mr. J. Gabriel, persuaded some of the settlers to spare any of the beautiful Rose Robins' nests they came across. The following are some of the examples saved, and, through Mr. Gabriel's thoughtfulness, passed on for my observation. Example (*a*) On a fork of a dogwood, made of green moss with a plentiful supply of cob-web, especially about the base, also decorated with beautiful silvery-grey lichens stuck on as if growing naturally, lined with hair-like material from fern-tree fronds. (*b*) On a dead twig of a blackwood, or some other acacia, lined with hair of ferns and a few soft seeds. (*c*) In fork of hazel limb, lined almost exclusively with opossum fur. Average dimensions of the three examples, externally, $2\frac{1}{4}$ inches in diameter by 2 inches high; interior, $1\frac{1}{2}$ inches across by 1 inch deep.

The following are some observations taken from my note book:—
"With Messrs. Gillespie and Hill, and my son Archie, visited Griffiths' Gully (Dandenongs), 5th December, 1896. Found Rose Robin building in a musk (this nest was afterwards found rifled, apparently by some other bird). A second nest was found, building, in a blanket-tree. (The following week, on the 12th, three eggs were taken therefrom.)

"Christmas Day. Archie and I visited a gully on the other side of the Range. Found Rose Robin's nest, containing young, about seven feet from the ground in a musk. Another nest observed at the height of about twenty feet from the ground; also in a musk, overhanging the creek. saw birds feeding their young. Saw another (third nest) evidently building, on a dead stick, caught in a musk.

"December 30th. Rose-breasted Robin's nest at the top of a tall hazel, containing two large young. Another with young and an addled

egg—nest in curious position, being placed on a dead limb that was suspended in a creeper (*Tecoma australis*.)”

Subsequently, in the same gully, several other nests of Rose Robins were secured. It was the season (1898) after the fire-fiend had swept wholesale through the ranges, and I was fearful that the dear birds would for ever forsake the burnt and blackened tracts.

On the 19th November I sent Archie to prospect, and to my delight, he returned with two sets of lovely eggs. A fortnight after we (Mr. J. Gillespie, myself, and son) again visited the locality and found no less than three nests building, and apparently nearly finished, the female in each case being the sole builder. This may in some measure account for the length of time it takes to complete a nest.

After the lapse of another fortnight (or on 17th December) Mr. Gillespie and I returned for the trophies. The first nest was situated on a somewhat low limb of a musk-tree, overhanging the stream, the beautiful nest being protected by suckers, which threw their broad and fragrant leaves around and over the nest. I ascended the adjacent tree, and with the aid of the “monkey” (a sticky substance attached to the end of a rod) I withdrew the eggs (three) from the nest and passed them down to my companion.

The next nest was in quite a different situation, being exposed on the limb of a dead tree (blackwood) on the side of the hill. Mr. Gillespie essayed the task of taking this nest, but the “monkey” failed to hold at the critical moment, and two out of the three eggs fell to the ground, and were most unfortunately smashed. The third and last nest was down again near the stream, on the dead portion of an arching branch of a musk. We fastened a rope to the centre of the limb, and passed it over another forked branch above, then, with a saw, severed from its trunk the limb upon which the nest was saddled, lowering it down. It seems easy to describe the task, but the exertion expended to lower the limb, at the same time to keep the precious nest upright, made the pair of us perspire at every pore. The nest contained a pair of eggs.

Never shall I forget the afternoon—that of a most delightful summer day—because it was one of the last nesting-outs I enjoyed previous to closing my manuscripts for the publishing of this book.

It seems specially fitting that Rose Robins, on account of the romantic interest surrounding them, and the extraordinary beauty of their moss-made nest, should be associated with the close of my life-long work. How appropriate, too, a frontispiece for a book on Australian birds they form may be seen by reference to that so beautifully executed by Mr. C. C. Brittlebank for this work.

Breeding months for Rose Robins have been proved to be from October to January, during which time they possibly rear more than one brood.



C.C. Brittlebank
20 12 98

London: Printed for the Author, 1898.

Rose-breasted Robins & Nest.

115.—*PETRECA COODENOVII*, Vigors and Horsfield.—(166)

RED-CAPPED ROBIN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 5.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 171.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 281 (1865); North: Austr. Mus. Cat., p. 103 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South and West Australia.

Nest.—Cup-shaped, small, and exceedingly neat; constructed of soft grass and bark, beautifully decorated outwardly with lichens and mosses, and cosily lined inside with fur. Situated usually low in the upright forked branch or elbow of a gnarled, lichen-covered limb of a tree in native pine (*Callitris*) or other waterless scrubs. Dimensions over all, $2\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{1}{2}$ inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, two to three, occasionally four; very round in form; texture of shell exceedingly fine; surface almost without gloss; colour, delicate pale-green, finely spotted, particularly round the apex, with umber and grey. Dimensions in inches of a pair: (1) $\cdot62 \times \cdot52$, (2) $\cdot62 \times \cdot51$; of a proper clutch: (1) $\cdot64 \times \cdot51$, (2) $\cdot64 \times \cdot5$, (3) $\cdot64 \times \cdot5$. (Plate 8.)

Observations.—The Red-capped Robin is a bright-feathered gem dwelling in the thirsty and more interior tracts of the eastern provinces, except North-west Australia and Northern Territory, where its place is taken by Dr. Ramsay's namesake (*P. ramsayi*), the Red-throated Robin.

However, I have found individuals of the Red-capped Robin near the coast in Victoria. Its glowing scarlet cap at once distinguishes it from the other Robins. Nothing can exceed the dazzling brilliancy of its cap and breast when seen contrasted with its black coat as it flutters on the wing facing the beholder, or as the bird is perched on a naked twig of a dead fallen pine. When singing, the pretty bird's whole body vibrates or trembles. The nests, too, are fit homes for such wee beauties—lichen-bedecked and artfully situated on some lichen-covered limb. Two nests, containing eggs, which I took in the Wimmera district, were in bull oaks (*Casuarina*)—one a sapling. Another pair I found when in company with Mr. Gabriel, in the Riverina, near Moulamein. One was placed in a pine (*Callitris*), while the other was on another species of tree common to pine ridges.

Mr. Lau's tribute of praise from the Darling Downs (Queensland) to the Red-capped Robin is, "A living jewel when seen on the margin of a mixed scrub in summer time. At winter it approaches the habitations of man, always choosing conspicuous places to show itself off. Its little open nest is one of the loveliest of its kind, situated not more than five feet from the ground, in the fork of a dry bush. Delicate lichens compose the outside, and feathers, hair, &c., the inside. Two eggs are all it lays. Rosenthal Creek, Warwick, November, 1879."

Another Queensland item. My young correspondent, Mr. Ernest Barnard, has kindly sent me a curious Coomooboolaroo note—a Red-capped Robin fighting its own reflection in a window. The Robin attacked his shadow fiercely, not only once but on several occasions. The pretty birds winter about the station.

I find from my notes that in the Bendigo district, 3rd October, 1884, I took an egg of the Narrow-billed Bronze Cuckoo (*C. basalis*) from a nest of this beautiful Robin.

Breeding season from August or September to January. About the middle of the last-mentioned month (1899) my son noticed two or three pairs of this Robin's nests about the Netherby Vineyard (Messrs. Graham Bros.), Rutherglen, Victoria, one of which had a nest containing two eggs, in an apple-tree.

116.—PETRÆCA RAMSAYI, Sharpe.

RED-THROATED ROBIN.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 172.

Geographical Distribution.—North-west Australia and Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—Dr. Ramsay's namesake may be distinguished from the ordinary Red-capped Robin by the centre of its throat being scarlet instead of black.

117.—MELANODRYAS (PETRÆCA) BICOLOR, Vigors and Horsfield.—(168)

HOODED ROBIN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 7.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 173.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 284 (1865); North: Austr. Mus. Cat., p. 105 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South, West, and North-west (?) Australia.

Nest.—Cup-shaped, ordinary size, and substantially constructed of strips of bark, coated with shields or pieces of outer bark stuck on with spiders' web, in some instances composed of fine twigs and grass; lined inside with grass, rootlets, hair, &c. Usually placed in the dead forked branch of a standing or fallen tree, in a hollow part of a tree, or sometimes in a thick bush in open forest parts. Dimensions over all, $3\frac{3}{4}$ inches by $2\frac{3}{4}$ inches in depth; egg cavity, $2\frac{1}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three, occasionally four; inclined to pyriform or roundish, much pointed at one end; texture of shell fine; surface glossy; colour, variable, usually a uniform dull-green or olive, with a darker shade of the same colour or an indistinct belt round the apex. Dimensions in inches of a pair: (1) $\cdot 8 \times \cdot 62$, (2) $\cdot 8 \times \cdot 6$. (Plate 8.)

Observations.—The Hooded Robin takes its name from its black head, the rest of the plumage being pied or black and white. The female is brownish-grey. In both sexes the eyes, bill, and feet are blackish-brown. Total length, 6 inches; wing, $3\frac{3}{8}$ inches; tail, $2\frac{1}{2}$ inches; bill, $\frac{3}{4}$ inch.

The Hooded Robin is generally dispersed in pairs in the open forest country over nearly the whole of the Continent, but exhibits a preference to the more interior portion, with intervening tracts of dwarf timber.

A nest of this species I observed in the open was at Mordialloc, on the shores of Port Phillip Bay. The nest was situated in a fork of a thick, low bush (*Leptospermum*), and contained a pair of fledglings, which were prettily streaked with grey, with under parts lighter in colour. Date, 13th October, 1888. Another nest, also containing young, was noticed in the Mallee, in some short suckers on the base of a bull-oak (*Casuarina*).

On the Darling Downs, Mr. Lau says:—"The Black Robin is a lover of little trees growing on sandy soil. There this bird is always to be found, chirping in low, mournful voice. The choice for site of nidification falls either to a three-forked stem or the upper hollow of a small stump, where the nest, with skilful architecture, is most securely placed. Situation usually low; two eggs are laid. Western Creek, September, 1864."

As might have been expected, Hooded Robins were observed throughout the journey in the north-west by the Calvert Expedition. Mr. Keartland remarks:—"On October 26th I found a nest of this Robin, containing two eggs. It was placed on the horizontal branch of a desert gum-tree, about six feet from the ground. It was a cup-shaped structure, built of strips of bark, cob-webs and fine grass. Although the rope holding our tarpaulin was tied to the branch, the birds visited and sat on the nest several times during the day. The eggs were dark olive-green, with a reddish-brown tinge at the larger end. Other birds of this species were subsequently seen near the Fitzroy River."

The following valuable note by Mr. Robert Hall, relating to the Hooded Robin, appeared in the "Victorian Naturalist," June, 1897:—

"In a short paper on the plumage of Robins ("Victorian Naturalist," vol. xiii., p. 116) I mentioned, on the authority of Mr. J. A. Hill, that the Hooded Robin, *P. bicolor*, V. and H., rears its first family while in immature plumage. That observer has now furnished me with further details of the nesting, together with the skin of the male bird, which was engaged in paternal attentions during nesting. In this the pronounced black markings of the adult are represented by grey in the young bird, except the interscapulum, which has two longitudinal blotchings of black, the upper tail coverts darker than the grey, but not an intense black, and the scapulars an indefinite white, broadly tipped with grey instead of the strong white of fuller age. All the remaining indistinct whites will doubtless disappear with the next moult, except the under tail coverts,

which are already as strong as in the aged birds. The nest was first observed on the 17th September, 1896, and in construction and material did not appear to differ from the usual one of the species. The first egg was deposited between the 22nd and 23rd of September, and a second between the 23rd and 24th of the same month, when the female bird immediately began to sit. These two eggs, typical in every respect, constituted the clutch, and they hatched out on the 10th October. Thus sixteen to seventeen days were occupied in incubation. The female on each visit was found to be sitting, and on no occasion during the frequent journeys to the nest was the male observed upon the eggs. Thus we are led to believe that the female bird takes upon herself the task of sitting throughout the period. The female, naturally a shy bird, did not show any inclination to leave the eggs when approached, and only when within a foot of her nest would she temporarily leave. The young birds were able to fly in about fourteen days from the time of hatching, but the exact day was not observed."

In every instance the female of the Hooded Robin does not solely undertake the task of incubation, proved by the fact that my son Archie observed a male bird leave a nest containing two fresh eggs, near Springvale, Victoria, 23rd November, 1895.

Breeding months July to December. Both in Queensland and Victoria nests with eggs of this species have been found as early as the first-mentioned month (July).

118.—*MELANODRYAS BICOLOR* (sub-species) *PICATA*, Gould.—(169)

PIED ROBIN.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 174.

Previous Description of Eggs.—North: Proc. Linn. Soc., N S. Wales, vol. ii., 2nd ser., p. 554 (1887).

Geographical Distribution.—North-west Australia, Northern Territory, and Interior.

Nest.—Small, shallow structure; composed of strips of bark, grasses, roots, &c., held together on the outside with cob-webs, and placed on a dead branch of a tree within a few feet of the ground (North.)

Eggs.—Clutch, two, and probably three. One specimen (1) is dark asparagus-green, faintly tinged with brown on the larger end; the other (2), with the exception of the smaller end, which shows the asparagus-green ground-colour, is shaded all over with rich brown, more particularly towards the larger end, which is entirely capped with a darker tint of the same colour. Dimensions in inches: (1) $.8 \times .59$, (2) $.78 \times .6$ (North).

Observations.—For want of specimens of my own I am glad to adopt Mr. A. J. North's description of the nest and eggs of the Pied Robin, which, it will be observed, resemble those of its compeer, the Hooded Robin.

Mr. North further remarks:—"This bird has a wide range over the Continent of Australia, specimens having been procured, together with the nest and eggs, by Mr. James Ramsay, in October, 1876, near Bourke, New South Wales; and last year (1888), both Mr. Cairn and the late Mr. T. H. Bowyer-Bower obtained several specimens about eighty miles inland from Derby, North-west Australia."

119.—*AMAURODRYAS PETRECA VITTATA*, Quoy and Gaimard.—(170)

DUSKY ROBIN.

Figure.—Gould: Birds of Australia, fol. vol. iii., pl. 8.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 177.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 286 (1865); North Austr. Mus. Cat., p. 106 (1889).

Geographical Distribution.—Tasmania, King Island, and Furneaux Group.

Nest.—Cup-shaped, somewhat large; outwardly composed of rough dead portions of plants with an admixture of spiders' cocoons and other soft substances, or curly, wire-like rootlets, then with bark (chiefly *Melaleuca*), and lined inside with fine grass or very light-brownish rootlets; sometimes long horse-hairs, fur, or a feather or two are added. Usually situated low in the hollow of a stump, in a niche of bark, or at the junction where a crop of suckers sprout from the base of a tree, in scrub or forest. Dimensions over all, 4 inches by $2\frac{3}{4}$ inches in depth; egg cavity, $2\frac{1}{2}$ inches by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, three, occasionally four; true oval in shape; texture of shell fine; surface glossy; colour, uniform olive-green, of a darker shade round the apex, where are also, in some instances, a splash or two of dark-brown. Occasionally a set is a much lighter green in tone, with a wash of brown and blotches of the same colour on the apex. Dimensions in inches of a proper clutch: (1) $\cdot 9 \times \cdot 64$, (2) $\cdot 87 \times \cdot 64$, (3) $\cdot 87 \times \cdot 63$; of a set from Flinders Island: (1) $\cdot 9 \times \cdot 68$, (2) $\cdot 89 \times \cdot 66$, (3) $\cdot 88 \times \cdot 68$.

Observations.—The plain-coloured Dusky Robin appears to be an insular form confined to Tasmania, King Island, and the Furneaux Group, in Bass Strait. Whether it has been found on the mainland opposite is extremely doubtful. Gould, who paid considerable attention to the distribution of this species, never met with it on the Continent of Australia.

From my Tasmanian notes, 1883, I take:—"Dusky Robin's nest found building in cleft of stump in ranges near 'Ridgeside,' 9th October, 1883. Returned on horseback nine days after, took three eggs.

"27th October, 1883.—Again out on horseback, took another Dusky Robin's nest with a similar complement of beautiful greenish eggs."

On King and Flinders Islands, the islanders brought similar nests and eggs into our camp. In the former locality the nest was taken from a stump. In the other instance the nest was placed about five feet high in a thick bush. Both dates were towards the end of November.

Gould remarks that the size and form of the nest depend upon the nature of the situation chosen for a site; if a ledge or fissure of rock, it is much spread out, but with the inside and top very neatly finished.

A remarkable trait in the character of the Dusky Robin is that not unfrequently it returns to the site of an old nest, rebuilding a fresh one thereon. Mr. E. D. Atkinson thoughtfully presented me with one of these double nests. He tells me he has found as many as five piled one upon the other, and on another occasion six.

After the manner of some other birds, the Dusky Robin has been observed to feign lameness, or a broken wing, in order to divert attention when its young are approached or interfered with.

The egg of the Pallid Cuckoo has been found in the nest of this Robin.

Breeding months from August to December.

120.—*AMAURODRYAS GULARIS*, Quoy and Gaimard. —(177)
Eopsaltria leucogaster, Gould.

WHITE-BREADED ROBIN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 13.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 181.

Previous Description of Eggs.—Campbell: Proc. Roy. Soc., Vict., vol. iii., p. 3, pl. 1, fig. 1 (1890).

Geographical Distribution.—West Australia.

Nest.—Cup shaped; composed of strips of bark, fine twigs and leaves; in some instances decorated outwardly with dead, bleached pieces of bracken fronds; lined inside with fine rootlets and grass. Usually placed low in the upright forked branches of a small tree (such as a *Casuarina*), in the fork of a grass-tree (*Xanthorrhæa*), or in a thick bush in forest. Dimensions over all, $3\frac{1}{2}$ to 4 inches by $2\frac{1}{2}$ inches in depth; egg cavity, 2 inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, two usually; inclined to oval in form; texture of shell fine; surface glossy; colour, olive or bronze-green, of a darker shade on or around the apex. Most resemble those of the Dusky or Hooded Robins. Dimensions in inches of a clutch: (1) $\cdot 83 \times \cdot 6$, (2) $\cdot 81 \times \cdot 61$; of another pair: (1) $\cdot 86 \times \cdot 61$, (2) $\cdot 83 \times \cdot 59$. (Plate 12.)

Observations.—The White-breasted Robin has a habitat peculiar to Western Australia, and may be easily identified by its dark, greyish coat, all the under surface being white. Both sexes are alike in colour. To discover its nest and eggs was one of the tasks I set myself before



WHITE-BREASTED ROBIN'S NEST.

From a Photo by the Author.

leaving Melbourne for the great western territory. I had not been in the Albany district a week before I made my way to the Tor Bay saw-mills. There, to my delight, a pair of White-breasted Robins almost immediately introduced themselves by appearing about the men's quarters. In a day or two (2nd October, 1889) I was enabled to track them down to the creek close by, where, in a fork of an erect she-oak (*Casuarina*) sapling, eight or ten feet up, I discovered the nest containing a pair of eggs, about half-incubated. A few days or a week subsequently, in another part of the forest, I took a second nest, hidden in the fork of a grass-tree (*Xanthorrhœa*), where the drooping, rush-like foliage carefully concealed the home. These eggs were perfectly fresh. A third nest, I found in a thick bush in the Karridale district, contained an added egg.

Gould and other authorities class the White-bellied or White-breasted Robin with the *Eopsaltria*, but as the nests and eggs, especially the latter, are totally dissimilar from those of any of the members of that genus, it is therefore obvious the White-breasted bird should be separated from the true *Eopsaltria*, and I have ventured to place it in the genus *Amaurodryas*, with the Dusky Robin of Tasmania, to which, oologically at all events, it more closely belongs.

Probably the chief breeding months for the White-breasted Robin are from September to December.

121.—*PŒCILODRYAS SUPERCILIOSA*, Gould.—(172)

WHITE-BROWED ROBIN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 9.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 242.

Previous Description of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1145 (1886).

Geographical Distribution.—Northern Territory and North Queensland.

Nest.—Cup-shaped, comparatively broad-rimmed, with frail foundation; constructed of fine twigs, grass, &c., the rim being ornamented with a few pieces of thin, flat bark, and lined inside with brownish fibrous material and rootlets. Dimensions over all, $3\frac{1}{2}$ inches by $1\frac{1}{2}$ inches; egg cavity, 2 inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, two usually; oval in shape; texture of shell fine; surface slightly glossy; colour, delicate pale-green, blotched chiefly, and spotted with reddish-brown and chestnut and purplish-brown; some of the markings form a belt round the upper quarter. Most resemble those of the Large-headed Robin (*P. capito*). Dimensions in inches of a proper clutch: (1) $\cdot 81 \times \cdot 59$, (2) $\cdot 8 \times \cdot 59$. (Plate 8.)

Observations.—I have persistently hunted for the eggs of this interesting Robin, especially on one occasion, at a creek near Townsville

(Queensland), where a pair of birds, by their antics, led me to believe they had a nest close by, but without success. Mr. Le Souëf, when afterwards in the same locality, likewise failed, but only partially, however, for a nest and eggs found 25th October, 1892, near the Acacia Vale Nurseries (Gulliver's), followed him home. They are the specimens from which my descriptions are taken.

However, the first eggs, which Dr. Ramsay described in 1886, were taken, together with the birds, eighteen years previously by Mr. Edward Spalding, when collecting in the Rockingham Bay district.

Gilbert discovered the White-browed Robin in the neighbourhood of the Burdekin, during the progress of Leichhardt's expedition from Moreton Bay to Port Essington. The bird appears to possess a rather local habitat, in Northern Queensland, including the Gulf of Carpentaria district; being represented in the west by its near relative, the Buff-sided Robin (*P. cerviniventris*).

122.—*PŒCILODRYAS CERVINIVENTRIS*, Gould.—(171)

BUFF-SIDED ROBIN.

Figure.—Gould: Birds of Australia, fol., supp., pl. 15.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 242.

Geographical Distribution.—North-west Australia and Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—The Buff-sided Robin was one of the ornithological discoveries of the Gregory Exploring Expedition to North-west Australia, 1861, the original skin having been secured by Mr. J. R. Eusey on the Victoria River, where he was for some time encamped in charge of a portion of the Expedition.

Mr. G. A. Keartland, of the Calvert Expedition (1896-7), obtained one skin (an adult male). Although several birds were shot they quickly decomposed owing to the great heat. The birds were observed in the dense mangrove scrub on the margin of the Fitzroy River, where their loud notes betrayed their presence. On the 1st January a pair of young ones, which had apparently just left the nest, was seen being fed by the parents.

123.—*PŒCILODRYAS CAPITO*, Gould.—(178)

LARGE-HEADED ROBIN.

Figure.—Gould: Birds of Australia, fol., supp., pl. 17.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 245.

Previous Description of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. iii., 2nd ser., p. 146 (1888).

Geographical Distribution.—Queensland and New South Wales.

Nest.—Cup-shaped, neat, resembling those of the *Eopsaltria*, but smaller and not so heavily built; constructed of moss, sometimes outwardly decorated with pieces of lichens; lined inside chiefly with portions of dead lawyer-palm (*Calamus*) leaves and a few wire-like rootlets. Usually placed low on a cane of a lawyer-palm, or in the fork of a slender tree, near a stream in dense scrub. Dimensions over all, $2\frac{3}{4}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, 2 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two; nearly elliptical in form; texture of shell fine; surface glossy; colour, delicate greenish-white, spotted and marked with somewhat large blotches, especially round the apex, of rusty or reddish-brown and purplish-brown. Dimensions in inches of a proper clutch: (1) $\cdot 8 \times \cdot 6$, (2) $\cdot 79 \times \cdot 6$; of another pair: (1) $\cdot 79 \times \cdot 61$, (2) $\cdot 79 \times \cdot 59$.

Observations.—The Large-headed Robin is an unobtrusive species and a dweller of the inmost recesses of the dense scrubs of the coastal region from the Clarence and Richmond Rivers to Rockingham Bay, North Queensland.

Its discovery was due to the late Mr. F. Strange, who sent Gould several specimens. Gould placed it with the *Eopsaltria*, but in the British Museum Catalogue Dr. Sharpe has relegated it to the genus *Pecilodryas*.

In 1888, Mr. A. J. North described, from Mr. R. D. Fitzgerald's collection, a nest and eggs of the Large-headed Robin taken near Ballina, at the mouth of the Richmond River.

In November, 1891, in the "Big Scrub" of the same wonderful district for bird life, I was fortunate in finding two nests. They were built on lawyer-canes, near Pearce's Creek, and each contained a pair of fresh eggs. The first nest was discovered on the 7th of the month. A photograph I took at the time shows the pretty structure resting upon the leaf at the junction of an upright cane.

124.—PECILODRYAS NANA, Ramsay.

LESSER LARGE-HEADED ROBIN.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 246.

Previous Description of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. ii., p. 374 (1877).

Geographical Distribution.—North Queensland.

Nest.—Very similar in shape and size to that of the Large-headed Robin (*P. capito*); constructed of fibrous material, decorated outwardly with green moss and shields of lichen; lined inside with whitish fibre and portions of dead, flat, lawyer-palm (*Calamus*) leaves. Usually placed low on the cane of a lawyer-palm, fork of a vine, &c., in scrub. Dimensions over all, $2\frac{1}{2}$ inches by 3 inches in depth; egg cavity, 2 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two; inclined to an ellipse in shape; texture of shell fine; surface glossy; colour, greenish-white, blotched moderately, but particularly round the apex, with dull reddish-brown and purplish brown. Similar to those of *P. capito*, but smaller. Dimensions of a proper clutch: (1) $\cdot 78 \times \cdot 58$, (2) $\cdot 78 \times \cdot 57$.

Observations.—Dr. Ramsay states:—"I first noticed this species on the Lower Herbert, and afterwards obtained it in the dense scrubs of Dalrymple's Gap, about fourteen miles from Cardwell; but it was not until Mr. Broadbent had forwarded to me adult specimens, shot from the nest, that I became aware of its being a distinct species; and although very closely allied to *Eopsaltria (Pacilodryas) capito*, Gould, of our New South Wales bushes, it may be at once distinguished by the rufous tint on the lores and around the eyes," which parts are white in *capito*.

Dr. Sharpe, who by the way has only examined one skin, says that the rufous tint would seem to indicate a sign of immaturity, and "the species is certainly doubtful."

However, like the two Rufous-breasted Shrike Thrushes, the two Pittas, and other cases I could cite, there is no doubt, to the field collector's mind, that the Little Robin and the Large-headed Robin are northern and southern representatives of each other.

The nest of the Little Robin, as described by Dr. Ramsay, is a *fac-simile* of the nest of the larger bird I took in the Richmond River district, even to its situation upon a *Calamus* leaf and against the upright caue. Mr. D. Le Souëf, to whom I am indebted for my specimens, secured one of two sets of eggs of the Little Robin from the Bloomfield River district. All these eggs can at once be recognised by their smaller size compared with those of the southern bird or Large-headed Robin.

The eggs I possess were taken 20th October, 1894. I have others dated 24th August, 1898.

125. —*PECILODRYAS ALBIFACIES*, Sharpe.

WHITE-FACED ROBIN.

Figure.—Gould—Sharpe:—Birds of New Guinea, vol. ii., pl. 18.

Reference.—Journ. Linn. Soc. (Zool.), vol. xvi., p. 318, 432.

Previous Description of Eggs.—*Ramsay; Proc. Linn. Soc., N.S. Wales, vol. viii., p. 25 (1883).

Geographical Distribution.—Northern Queensland (Cape York); also New Guinea.

Nest.—Cup-shaped, like that of all the genus, inside very deep; composed of wiry rootlets, pieces of dry palm leaves, &c., the margins being ornamented with green mosses; it is placed between upright forks of a branch. Dimensions over all, $2\frac{1}{4}$ inches across by $2\frac{1}{2}$ inches in depth; egg cavity, a trifle over $1\frac{1}{2}$ inches deep (Ramsay).

* No dimensions given.

Eggs.—Clutch, two; colour, greenish-white, marked all over with reddish dots and spots, but closer together on the thicker end (Ramsay).

Observations.—Amongst the specimens collected at Cape York by Mr. Harry Barnard, season 1896-7, for Mr. Dudley Le Souëf and others, was a male skin of the White-faced Robin, a bird hitherto unrecorded for Australia. It had only been previously known from New Guinea, whence the nest and eggs in the Macleayan Museum, described by Dr. Ramsay, came. It is somewhat strange that while Dr. Ramsay gave careful dimensions for the nest, he omitted to do so for the eggs.

126.—SMICRORNIS BREVIROSTRIS, Gould.—(161)

SHORT-BILLED TREE TIT.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 103

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 209.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 274 (1865); Ramsay: P. Z. S., p. 359 with fig. (1869); North: Austn. Mus. Cat., p. 100 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South and West Australia.

Nest.—Small and round, with a hooded side-entrance; composed of fine grass matted with spiders' webs and cocoons and a brown downy substance; lined inside with soft material—feathers, &c., and suspended amongst the foliage of an overhanging branch or attached to twigs. Dimensions, about 3 inches in diameter; entrance, $\frac{3}{4}$ inch across.

Eggs.—Clutch, three to four; nearly elliptical in form; texture of shell fine; surface slightly glossy; colour, brownish or vinaceous-buff, with a dull belt of a darker shade round the apex. Dimensions in inches of a proper clutch: (1) $\cdot 6 \times \cdot 44$, (2) $\cdot 6 \times \cdot 44$, (3) $\cdot 56 \times \cdot 4$. (Plate 8.)

Observations.—The Short-billed Smicrornis, or Tree Tit, being one of the feathered mites of the bush, escaped general notice, therefore many inner secrets of its natural economy have not yet been revealed to ornithologists. About all we have ascertained respecting it is that it possesses a very small round nest, with a very little entrance, wherein it lays three or four tiny eggs, and that the birds singly or in small families thread the leaves of the "forest rafters" high and low in search of minute insects and their larvæ, upon which they feed. When active, they utter a rasping little note like a Tit's (*Acanthiza*), while now and again they answer one another in a sweet simple call.

The nests I have found (early in October, 1880) were in the Bendigo district. The Short-billed Tree Tit shows a preference for the more open timber tracts of the interior provinces, and is found in all the States from South Queensland round to Western Australia. Some authorities omit the western territory, but it is recorded in Gould that Gilbert found the bird in the York district. Through the goodness of Mr. Bernard

Woodward, Perth Museum, I have also received skins taken in Western Australia.

Regarding the Short-billed Tree Tit, which Mr. Lau calls by the high-sounding vernacular title, "Eucalyptian Linnet," he says: "There are three little eucalyptus blossom searchers, of which this is the smallest. It is grey in colour. Its neatly-formed nest has the shape of a sedan chair, the loophole being nearly in the middle of the frame, and is constructed of fine grass, the bedding being soft feathers, wherein four very small greyish-brown clouded eggs rest. Nest taken at Pike's Creek (Darling Downs), in a eucalypt sapling, five feet above the ground."

Some seasons in Queensland this *Smicrornis*, or Tree Tit, lays as early as June or July. The set of eggs I now possess was taken by Mr. W. B. Barnard, at Crowesdale, 28th June, 1897.

However, the chief breeding months may be stated as September to November. Once a nest was found early in March.

127.—*SMICRORNIS FLAVESCENS*, Gould.—(162)

YELLOW-TINTED TREE TIT.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 104.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 210.

Previous Description of Eggs.—North: Rept. Horn Scientific Exp., p. 84 (1896).

Geographical Distribution.—Northern Territory, North Queensland, South (Central), and North-west Australia.

Nest.—No doubt resembling that of *S. brevirostris*, and built in a eucalypt.*

Eggs.—Clutch, three probably; inclined to an ellipse in shape; texture of shell fine; surface glossy; colour, vinaceous or light purplish-buff, with drab and purplish-grey markings, chiefly on the apex. Dimensions in inches: (1) $\cdot 58 \times \cdot 41$, (2) $\cdot 58 \times \cdot 4$, (3) $\cdot 57 \times \cdot 42$, (4) $\cdot 56 \times \cdot 41$.

These eggs are from Central Australia (Mr. Keartland's collection), and are exactly similar to those of *S. brevirostris*, except being smaller and the markings perhaps a little more pronounced. The original specimens, described by Mr. North, if referable to this species at all, would appear not to be typical.

Observations.—This, the tiniest (total length only $2\frac{1}{2}$ inches) of our Australian avi-fauna, is a dweller chiefly of the north and central portions of Australia; and from the circumstance of its confining itself almost exclusively to the topmost branches of the trees, where its diminutive size prevents it being seen, as Gilbert no doubt found out, it is not easily secured.

During the Horn Scientific Expedition, the Yellow-tinted Tree Tit

* See Appendix.

was first seen in Central Australia, near Running Waters. Mr. Keartland states they were generally found either singly or in pairs in eucalypts along the creeks, but also frequently in the scrub on the hill sides.

128.—*GERYGONE ALBIGULARIS*, Gould.—(155)

WHITE-THROATED FLY EATER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 97.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 212.

Previous Descriptions of Eggs.—Ramsay: P.Z.S., p. 576 (1866).

Campbell: Southern Science Record (1882).

Geographical Distribution.—North-west Australia, Northern Territory Queensland, New South Wales and Victoria.

Nest.—Oval, with a tail-like appendage and top-side hooded entrance; constructed of fine shreds of brownish inner bark matted with wool and spiders' cocoons, and ornamented with droppings of wood-eating insects or resin (kino) from trees; lined inside with soft bark, &c., and fastened by the upper end to a low or three-pronged twig at the extremity of a swaying branch, perhaps twelve feet from the ground. Total length, (including tail, $2\frac{1}{2}$ inches), 7 inches by a diameter in broadest part $2\frac{1}{2}$ inches; entrance, $\frac{3}{4}$ inch across.

Eggs.—Clutch, three, occasionally four; elongated in form; texture of shell fine; surface slightly glossy; colour, warm-white, freckled, sometimes blotched with umber, chestnut, and purplish-brown. Dimensions in inches of a proper clutch: (1) $.74 \times .48$, (2) $.7 \times .46$, (3) $.69 \times .5$. (Plate 8).

Observations.—Much and peculiar interest surrounds the various Gerygones, or Pseudo-Gerygones, of which eight or nine species of these leaf-loving little birds inhabit Australia.

The White-throated Gerygone, or Fly Eater, as we now call it, enjoys a fair range, chiefly over the northern and eastern parts of Australia, and was recorded for Victoria almost simultaneously by Mr. R. Hall and Mr. A. G. Campbell in 1899. It was the first bird I shot when I landed in Queensland, raking it from the top of a tall tree growing by a creek near Townsville.

The eggs I possess were taken by Mr. W. T. Bailey, on the 5th December, 1888, at Pimpana, South Queensland, from a nest in a lemon tree. The birds had built in a cinnamon tree on the 14th of the previous month. It was a case of "love's labour lost," as far as concerned the sweet little birds, for in the interests of oology they were deprived of that clutch too.

With reference to the Gerygone's nest being somewhat weighted on the tail with eucalyptus kino or resin, Mr. Lau suggests it is to steady the nest when the bowing branch holding it is tossed by the wind.

I here give at length Dr. E. P. Ramsay's interesting remarks on the White-throated Fly Eater:—

"This delicate little bird is only a summer visitant to the neighbourhood of Sydney, arriving regularly in tolerable numbers every year during September, and remaining to breed, taking its departure again in March and April. Its arrival is at once made known by its soft and varied strain of considerable melody. From its song (not that it resembles the notes of any other bird), and partly on account of its yellow breast, it has gained the local name of the 'Native Canary.' Upon its arrival it betakes itself to the smaller trees and saplings, and almost at once commences to build, selecting some strong twig among the innermost boughs of a bushy tree, to which it suspends its oblong, dome-shaped nest, the extremity of which terminates in a well-formed tail of about three inches in length, which is extremely characteristic. The body of the nest is in length from six to eight inches, and four in breadth; it is composed of fine pieces of stringybark and grasses closely interwoven and matted together with cob-webs, being lined with the silky down of the cotton-tree, or with opossum fur; the entrance, which is about two inches and a half down the side, is one inch in diameter, and completely hidden from view in front by a neatly-woven hood of one inch and a half in length. The nests are often placed in trees infested with ants, which insects are often found on the nests themselves, but do not, as far as I am aware, cause the bird any anxiety. The eggs, which are laid from October to December, and sometimes even as late as January, are three in number. Their ground-colour is of a delicate white, but almost hidden by numerous spots, dots, blotches and freckles of dull-red; in some, the markings are thicker upon the larger end, where they form a well-defined zone or circular blotch; others are minutely dotted. Upon the whole, both in shape and colour they closely resemble those of *Malurus cyaneus*, but may be distinguished by being more thickly and strongly marked; they are also slightly larger and more lengthened in form. This species shows a decided preference for the more open parts of the forest, with thickly-foliaged trees and young saplings of eucalyptus; its actions among the leaves, where it searches for insects, their larvæ, &c., are very pleasing and graceful, stopping in its search every now and then to pour forth its curious and varied song, in which it will sometimes stop abruptly and fly off without finishing, as if something had startled it or suddenly attracted its attention."

129.—GERYGONE CINERASCENS, Sharpe.

GREY FLY EATER

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 212; Jour., Linn. Soc. (Zool.) vol. xiii., 494.

Geographical Distribution.—North-west Australia; also New Guinea.

Nest and Eggs.—Undescribed.

Observations.—Dr. Sharpe has identified this bird as an Australian species from a "very much crushed and a bad skin," taken on the Victoria

River, and dated 1855. It is somewhat singular that the bird has not since been re-discovered, especially by collectors who have visited the mainland opposite to New Guinea.

130.—PSEUDOGERYGONE CULICIVORA, Gould.—(157)

SOUTHERN FLY EATER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 99.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 220.

Previous Description of Eggs.—Campbell: Proc. Roy. Soc., Vict., vol. iii., p. 3, pl. 1, fig. 3 (1890).

Geographical Distribution.—New South Wales, Victoria, South and West Australia.

Nest.—Suspended by the top to the extremity of a branch; composed of shreds of bark, small spiders' nests, green moss, &c., all felted together with cob-webs and vegetable fibres, and warmly lined with feathers; it is about 8 inches in length, pointed at the top and bottom, and about 3 inches in diameter; the entrance is a small hole about 3 inches from the top, with a slight projection immediately above it (Gould).

Eggs.—Clutch, three; nearly oval in shape; texture of shell fine; surface slightly glossy; colour, warm or pinkish-white, spotted and blotched or splashed with rich chestnut or reddish-brown and purplish-brown, the markings being thickest on the apex. Dimensions in inches of a clutch: (1) $\cdot 65 \times \cdot 47$, (2) $\cdot 63 \times \cdot 46$, (3) $\cdot 63 \times \cdot 46$.

Observations.—I became acquainted with this musical little bird in Western Australia, to which territory it was supposed to be restricted, but I have since discovered the species in the interior of Victoria and Riverina, New South Wales.

The bird possesses a wavy, lackadaisical song, which is very pleasing, and quite unlike any other bird's that I know. In Western Australia the Southern Fly Eater appears to appreciate the more open tracts of forest. During September, 1889, a nest containing three eggs was collected for me from the topmost branches of a peppermint-tree (*Agonis*), at Quindalup, Geographé Bay. Before I reached the locality on my western tour, two of the set were unfortunately broken. However, I secured another set (three) at Coogee, near Fremantle, during the same month (September).

The Southern Fly Eater in Victoria and Riverina seems partial to the "box" (*Eucalyptus*) flats and pine ridges. I first noticed it at Benjeroop, Victoria, where I shot a specimen in December, 1890. As the birds are diminutive and seek the topmost branches of a tree, they are not easily detected, but may be found at times by their peculiar song, which is emitted at long intervals.

Since the above was written, my son found several pairs breeding at Rutherglen, in the north-western district of Victoria, during September (1899). The nests were situated at heights varying from two feet to ten feet from the ground. He sent for my inspection two nests (one accompanied by skin of the bird), both having the usual tail-like appendage. One was elongated ($10\frac{1}{2}$ inches in length by $2\frac{1}{2}$ inches in diameter), and the other roundish (7 inches by $3\frac{1}{2}$ inches). They are similar to those described by Gould from Western Australia, but without moss in their construction, having instead such evidences of civilization as cattle hair, fragments of old newspapers, &c. The eggs also differ, one set being redder than those already described by me, while the other was more purple and more beautiful in colour of markings.

131.—PSEUDOGERYGONE BRUNNEPECTUS, Sharpe.

BROWN-BREASTED FLY EATER.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 221.

Geographical Distribution.—North Australia (Sharpe); also New Guinea and Aru Islands.

Nest and Eggs.—Undescribed.

Observations.—This little-known Gerygone, which may be distinguished by its reddish-brown breast, flanks and ear coverts, is stated by Dr. Sharpe to be very doubtfully distinct from *P. conspicillata* of New Guinea.

132.—PSEUDOGERYGONE MAGNIROSTRIS, Gould.—(158)

LARGE-BILLED FLY EATER.

Figure.—Gould: Birds of Australia, fol. vol. ii., pl. 100.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 222.

Previous Description of Eggs.—Nil.

Geographical Distribution.—Northern Territory and North Queensland; also New Guinea (probably).

Nest.—Exceedingly long, ragged, bulky, resembling a bunch of flood débris suspended from branches over the water; constructed of strings of grass (dead), skeleton leaves, rootlets, &c.; the nest proper, which is near the bottom, sometimes nearer the top, being built of finer materials, mixed with cocoons, and lined with soft stuff—feathers, &c. It is slightly pointed or bearded, and has the side entrance partly hooded. Dimensions: Total length, 17 or 18 inches by 5 inches broad in thickest part; nest proper, 5 inches long (including tail, 2 inches) by 4 inches broad; the entrance, situated 5 inches from the bottom, $\frac{3}{4}$ inch across.

Eggs.—Clutch, three; inclined to oval in shape; texture of shell fine; surface glossy; colour, warm-white, rather boldly blotched and spotted, especially on the apex, with reddish-brown and purplish-brown. Dimensions in inches of a proper clutch: (1) $\cdot68 \times \cdot48$, (2) $\cdot68 \times \cdot47$, (3) $\cdot67 \times \cdot47$.

Observations.—The Large-billed Gerygone, or Fly Eater, is a Northern Queensland species, and may there be considered a common one. It also ranges westward across the Northern Territory. In some localities it is known as the "Flood Bird," on account of its nest having the appearance of long bunches of flood débris or rubbish left hanging from the branches by receding water.

I have no doubt that the nests secured by Dr. Ramsay and his party in the belts of mangroves near Cardwell, and described as *G. flavida** (*personata*), should be referable to the Large-billed Fly Eater. The Doctor accurately describes the fashion and situation of the nest of *G. magnirostris*, whereas *G. personata* builds an entirely different nest, hidden away in palm scrubs, and usually in the proximity of a hornet's nest.

Mr. W. B. Barnard writes:—"The little Flood Bird makes a nest from a foot to eighteen inches in length, with a side entrance near the top, the hole is about four inches down, lined with feathers; the rest of the nest is composed of weeds, &c., matted together, and is generally built in a vine overhanging a creek. Builds from August to December."

In two or three instances Mr. Barnard found an egg of a Bronze Cuckoo in the nest of the Large-billed Gerygone.

January and February may be included in the breeding months.

133.—PSEUDOGERYGONE FUSCA, Gould.—(156)

BROWN FLY EATER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl 98.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 223.

Previous Descriptions of Eggs.—Gould; Birds of Australia (1848), also Handbook, vol. i., p. 267 (1865); North: Austr. Mus. Cat., p. 99 (1889).

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest.—Elongated or oval, with top and bottom extensions (the top being woven into its holding-place, the bottom terminating in a beard-like point), and with side entrance semi-spouted or with a projection above it resembling the peak of a cap; composed entirely of fine golden-green moss, strengthened with long thread-like, black rootlets, covered with white webs, and ornamented with roundish pieces of lichen, greyish-green

* Proc. Zool. Soc., p. 587 (1875).

in colour; lined inside with soft material—chiefly thistle-down—and usually placed at or suspended from the end of a lawyer palm (*Calamus*) branch or leaf in dense scrub or forest. Total length, 11 inches (including tail, $4\frac{1}{2}$ inches); diameter in thickest part, $2\frac{1}{2}$ inches; entrance, which is situated about $3\frac{1}{2}$ inches from the extreme top, $\frac{3}{4}$ inch across.

Eggs.—Clutch, three; long-oval in shape; texture of shell fine; surface glossy; colour, white, speckled, chiefly in the form of a belt round the apex, with reddish-brown or chestnut and purple. Dimensions in inches of a proper clutch: (1) $\cdot67 \times \cdot45$, (2) $\cdot65 \times \cdot46$, (3) $\cdot65 \times \cdot45$.

Observations.—The Brown Gerygone appears to possess a somewhat limited habitat, being confined to the scrubs of the coastal region from South Queensland to presumably Eastern Victoria.

Almost the first nest Mr. W. T. Bailey and I together found during our trip to the Big Scrub, Richmond River district, was one of this modest-coloured little Gerygone. Subsequently we found many, dangling gracefully at the extremities of thorny spikes of climbing lawyer palms (*Calamus*) in the dark windings of the scrub. Some of the nests were simply marvellous for shape and beauty, being lengthened and elegant in form, with a small, cunningly-wrought, hooded entrance at the side, and neatly composed of the most beautiful of rich emerald moss, decorated fantastically nearly all over with shields of æsthetic-coloured lichen. Within was cosiness itself.

A nest I found of this species suspended in a tree growing on the margin of the Fitzroy River (Queensland), 2nd October, 1885, more resembled that of the White-throated Fly Eater (*G. albigularis*), being constructed of fine shreds of bark interwoven with a plentiful supply of spiders' cocoons, and ornamented with wood insects' droppings. I flushed this little bird from her pair of eggs, which were partly incubated. The nest also contained an egg of the Bronze Cuckoo (*C. plagosus*).

Breeding months usually September to December. The illustration, "Nest of the Brown Fly Eater," shows a snug little home swaying at the end of a "lawyer" frond.

134.—PSEUDOGERYGONE LÆVIGASTRA, Gould.—(159)

BUFF-BREASTED FLY EATER.

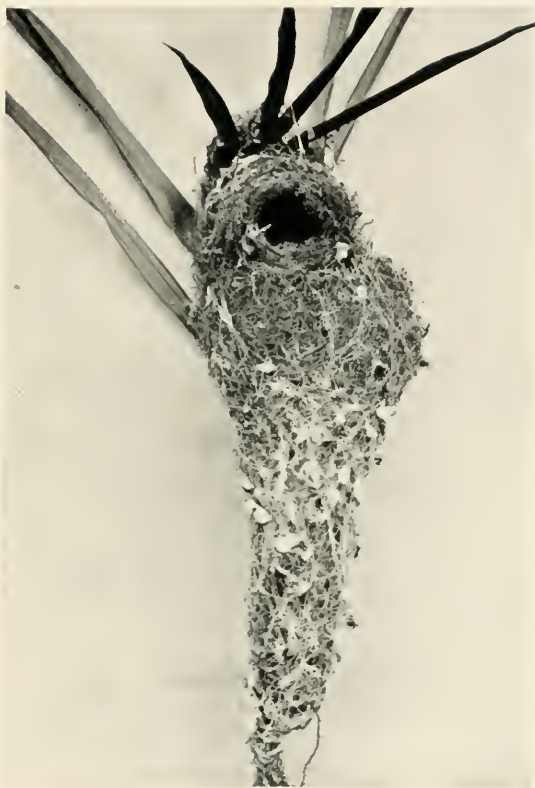
Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 101.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 223.

Geographical Distribution.—North-west Australia, Northern Territory, and Queensland.

Nest and Eggs.—Undescribed.

Observations.—According to Gould, Gilbert secured several specimens of this little bird in the Port Darwin district, including the islands in Van



NEST OF THE BROWN FLY EATER (GERYGONE)

From a Photo by the Author.

Diemen's Gulf, and states that it has a very pleasing but weak piping note, and occasionally utters a number of notes in slow succession, but not so much lengthened as those of the Southern Fly Eater (*P. culicivora*).

Concerning Mr. G. Masters' species, *G. simplex*, Dr. Sharpe states:—"From the description given by Mr. Masters, I consider his *G. simplex* to be the same as *G. levigaster*. Should it eventually be distinguished from the latter species, it cannot bear the name of *simplex*, already appropriated by Canabis, and I would propose *Pseudogerygone masterii* for it."

Mr. K. Broadbent found this variety near Normantown (1875), and subsequently met with the birds at Charleville (Queensland).

135.—PSEUDOGERYGONE CHLORONOTA, Gould.—(160)

GREEN-BACKED FLY EATER.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 102.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 229.

Geographical Distribution.—North-west Australia (probably), Northern Territory, and North Queensland.

Nest and Eggs.—Undescribed.

Observations.—The Green-backed Fly Eater is an inhabitant of the northern parts of Australia. Gilbert found it tolerably abundant in the region of Port Darwin, where it dwells among the extensive tracts of mangroves which stretch along the coast. The bird is of a shy and retiring disposition.

136.—PSEUDOGERYGONE PERSONATA, Gould.

Gerygone flavida, Ramsay.

BLACK-THROATED FLY EATER.

Figure.—Gould: Birds of Australia, fol., Supp., pl. 14.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 229.

Previous Description of Eggs.—Le Souëf: Ibis, p. 59 (1898).

Geographical Distribution.—North Queensland; also New Guinea.

Nest.—Elongated, with hooded side entrance; composed chiefly of palm-tree fibre and portions of thin bark, coated with moss and lichen; lined inside with soft material, and usually suspended to the leaves of a lawyer palm (*Calamus*), four to six feet above the ground, in thick scrub. Total length, 9 inches (including tail, 2 to 3 inches); thickest diameter 3 inches; the entrance, situated 3 inches from the top, $\frac{3}{4}$ inch across.

Eggs.—Clutch, two usually, three occasionally; inclined to oval in shape; texture of shell fine; surface glossy; colour, warmish-white, somewhat heavily blotched, especially round the apex, with reddish-brown and purplish-brown. Dimensions in inches of a clutch: (1) $\cdot 7 \times \cdot 5$, (2) $\cdot 68 \times \cdot 5$; of a larger pair with markings all over and more of a speckled nature: (1) $\cdot 74 \times \cdot 53$, (2) $\cdot 74 \times \cdot 52$. (Plate 8.)

Observations.—The pretty Masked Gerygone, or Black-throated Fly Eater, is a dweller in the rich tropical growths of Northern Queensland. The species is somewhat puzzling, because we rarely see the full "masked" male, as figured in Gould from the original specimen secured through the instrumentality of Messrs. Jardine—father and son—at Cape York.

According to the British Museum Catalogue, Dr. Ramsay's variety, *G. flavida*, may be incorporated with the Masked bird, or *P. personata*. Dr. Ramsay apparently entertained a doubt about the validity of his own species, for in the "Remarks" on his "Tabular List," p. 34, he states:—

"I have lately seen specimens of a Gerygone from the north-east coast which seem to indicate that my *G. flavida* is only the female of Mr. Gould's *G. personata*; but notwithstanding the great similarity in size and plumage, further proof will be necessary, as we have lately received the adults, male and female, of *G. flavida*, shot on taking their nest and eggs, and three males examined are exactly alike in plumage to the females; but it is not improbable that the young males of *G. personata* resemble the females in plumage, and breed before attaining adult livery. No specimens, however, in the plumage of the adult male of *G. personata* have yet been obtained from Rockingham Bay."

Mr. W. B. Barnard, on returning from a northern trip, wrote to me as follows:—"I am sending you two skins (σ and ϕ) of what I believe to be a Gerygone. I only succeeded in getting two eggs of this little bird, and these, I am sorry to say, the rats ate. They were half-an-inch long, pink speckled all over, especially at the larger end, where a ring is formed. I found three nests, two of which the birds forsook. They were all built hanging under leaves of lawyer palms, four to six feet from the ground. The entrance at the side had a cover over it. The nests were composed of fibre of palm trees and bits of their bark, and lined inside with feathers. Breeds in December."

In the male bird the deep olive-brown patch or shield on the chest is not so defined or "clearly cut" as in Gould's figure. In the female this mark is absent.

I here give Mr. D. Le Souëf's experience of the Masked Gerygone, or, as it seems to have been fitly termed locally, the "Hornet's Nest Bird":—"These little birds are very shy and difficult to secure in the thick scrub where they make their home. One curious circumstance is that they always seem to build their hanging, dome-shaped nests in close proximity to a wasp's nest, from within a few inches to four feet away, and it is difficult to conjecture for what reason. The nests vary in size, and are generally suspended from the end of a thin branch or palm leaf. They have a porch at the entrance, sometimes going straight in and occasionally upward, and more prominent in some than in others.

The nest is composed of fine fibres of grass, and on the lower portion, which hangs loose below, are often fastened the dry excreta of wood-boring caterpillars, which add weight to it and prevent its being blown over or against the nest. It is lined with fine brown-coloured down off the seeds of scrub plants; a good deal of cob-web is worked in, which materially helps to keep the lightly-built structure together, and cob-web is also plentifully put on the outside."

Mr. H. G. Barnard, at Cape York, in the season 1896-7, procured nests of this species in November, and again in February and March. Some of the nests contained eggs partially dried, a circumstance attributed to the intense summer heat. One nest found was remarkable for its double set of eggs—three in a mummified condition and three on top of them perfectly fresh.

Breeding months August or September to March.

137.—MALURUS CYANEUS, Ellis.—(185)

BLUE WREN.

Figure—Gould Birds of Australia, fol., vol. iii., pl. 18.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 286.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i, p. 319 (1865); North: Austn. Mus. Cat., p. 112 (1889).

Geographical Distribution.—South Queensland (?), New South Wales, Victoria, and South Australia.

Nest.—Globular, side-top entrance; usually composed of old greyish weather-beaten grasses with an admixture of cocoons; lined inside with fine yellowish-coloured grass and finally with feathers, hair, down, seed vessels, &c. Placed near the ground in a low dense bush or tussock of grass. Exterior dimensions, $4\frac{1}{2}$ inches in length by $3\frac{1}{2}$ inches in breadth; entrance, 1 inch in diameter.

Eggs.—Clutch, three to four, occasionally five; oval inclined, sometimes roundish in form; texture of shell very fine; surface slightly glossy; colour, delicate pinkish-white, finely freckled (sometimes slightly blotched) with reddish-brown or pinkish-red, the markings usually being thickest at the larger end, where they generally form a zone. Dimensions in inches of proper clutches, round examples: (1) $\cdot68 \times \cdot5$, (2) $\cdot67 \times \cdot5$, (3) $\cdot67 \times \cdot5$; lengthened examples: (1) $\cdot7 \times \cdot52$, (2) $\cdot7 \times \cdot5$, (3) $\cdot7 \times \cdot5$. (Plate 8.)

Observations.—The merry and familiar Blue Wren is found in South-eastern Australia, frequenting alike the coastal and some of the interior localities.

The breeding season is included in the months from August or September to January, during which period it rears two or three broods.

The hidden nest containing its set of red-speckled eggs may be often discovered by the noisiness and over-anxious movements of its owners.

This, like many of the other Wrens, is among the foster-parents of the Narrow-billed Bronze Cuckoo (*C. basalis*).

Of course, I possess numerous nesting notes regarding the familiar Blue Wren. Here are one or two:—

“Myrmiong, 11th October, 1890.—Nest lined with thistle-down, prettily decorated with Rosella Parrot's feathers. Was, with its set of eggs, a perfect picture, situated in a bunch of grass among the branches of a dead fallen golden wattle (*Acacia*).

“Benjeroop, Murray District, 1st December, 1890.—Nest with three eggs found. Again in the same district, Blue Wren's nest containing two Cuckoos' (*C. basalis*) eggs.”

In one or two instances I have found a Cuckoo's egg between the grass-made folds of the nest, showing that the Cuckoo had deposited its egg while the nest was in course of construction.

A youthful correspondent (Master Leslie Cameron) sends me the following curious note from Riverina:—“On a blue-bush hill on our homestead lease there is a bullock's head (cranium) in which a little Blue Wren has built its nest. The nest is in the top of the head, and they (the birds) have the eye-hole to go in and out.”

Mr. Robert Hall, in the interesting and original “Notes on the Bird-fauna of the Box Hill district,” states that in November one season, a nest of the Blue Wren from which eggs were taken was gradually removed and re-built by the birds in the same paddock. Another pair of birds built four nests consecutively, which were robbed by boys. However, the Wrens, keeping in the same hedge, laid the fifth time and baffled the boys. Mr. Hall proved that the period of incubation is fourteen days, and the young fly from the nest the ninth or tenth day after being hatched.

Gould, in his introduction to the genus *Malurus*, remarks:—“The members of this genus are among the most beautiful of Australian birds. Their (the males') gay attire, however, is only assumed during the pairing season, and is retained for a short period, after which the sexes are alike in colouring.” He further says, with regard to *M. cyaneus* (Blue Wren), “At this (winter) period of the year the adult males throw off their fine livery, and the plumage of the sexes becomes so nearly alike that a minute examination is requisite to distinguish them.”

Mr. A. J. North has treated the interesting subject somewhat boldly, but speculatively, and has arrived at the conclusion that Gould was decidedly in error. Some field notes of other observers appear to substantiate Mr. North's own observation, and his contention is that males of the various *Maluri* may be seen in their beautiful dress at any period of the year, and that when the male has once donned its fully-adult livery it “always retains that phase,” which is as brilliant in its colouring during the winter months as it is in spring and summer.

I was almost persuaded to accept Mr. North's theory, had not Mr. James Cooper, the enthusiastic bird fancier, of Eastern Market, Melbourne, put the matter to a test by trapping a male Blue Wren and keeping it in captivity for a season. During April, May, and June the

bird moulted its blue feathers, drab or dingy-greyish ones coming instead. After a time the blue colouring gradually and in patches came into the drab plumage, and by the middle of July the bird wore its usual exquisite dress, and so delighted was Mr. Cooper with the pretty bird's appearance, that he gave it once more its liberty.

However, Gould's statements need modification, for while the male Wrens do change their dress they do not "retain it for a short period," but for eight or nine months of the year, or excepting the moulting season. Then comes the statement that a "minute examination is requisite to distinguish them" (that is, the male in his duller dress and the female). The male always retains his deep-bluish tail, while he may also be distinguished by his darker or black bill.

I may state that I saw the Blue Wren in captivity at Mr. Cooper's during February, when it appeared in full plumage, but at the critical time of change I happened to be stationed in the country, therefore missed the rare opportunity of recording personally the notes of such an interesting test.

Mr. C. C. Brittlebank's field observations are that the male Blue Wrens generally don their gay plumage about from the 15th to 20th August, retaining it till April or May following.

Somewhat earlier than usual, on the 18th and 21st July (1896), Mr. Robert Hall secured, at Box Hill, three males whose blue change was nearly completed, and at the following meeting of the Field Naturalists' Club he exhibited a most interesting series of about a dozen skins obtained during several seasons, showing the progress of the spring dress.*

My article on the Blue Wren, which appeared in "The Australasian" (September 21st, 1895), was followed by some interesting and original field observations by various correspondents, particularly with regard to the change of plumage in the male and the plurality of his mates.

Mr. Henry Holroyd, Port Lincoln, South Australia, wrote, expressing an opinion that Mr. North was correct in his surmises about the moulting of the male birds. However, he subsequently wrote to me, after watching the birds closely in the brush fences and bushes close to his house for another winter, that he was now of the opposite opinion, and was quite convinced that the male birds changed their beautiful blue coats temporarily for duller ones.

Mr. Holroyd continues:—"But now I have another statement to make concerning these lovely little birds, which will no doubt provoke much ridicule and argument, and therefore I do it with diffidence, though confident of my correctness. For many years I have noticed that the male bird is attended by one, two, or three female ones. Never did I notice at any time more than the one male in the company. Wherever he went he was attended by these little bodies, and at last I began to suspect that the Blue Wren was in its habits either a Mormon or an Oriental! I mentioned my ideas to a friend or two, but was laughed to

* Mr. Hall has also given an important paper to the Royal Society of Victoria (vol. xii., new series, pp. 59-73), on the changes of plumage in Blue Wrens, but I do not think he has satisfactorily proved that *M. Gouldi*—the Tasmanian form—is found on the mainland.

scorn. At last, during shearing time one year, in October, my fancies proved correct. A piece of dead mallee hung down inside the roof of my wool-shed, and in this I discovered a nest with a little Wren sitting upon her eggs, three in number. Outside, upon the roof, the male bird hovered, with at times a female bird, every now and then peeping through the crevices and through a little window let into the thatch, at his interesting spouse. I watched very carefully, and told the wool-roller also to have an eye to them, when at last, one afternoon, wife number two came hopping through the roofing to the nest above. Number one came off the nest and gave it up to number two, and this went on for several days, observed by many of us, and each time of relief the outgoing little lady was welcomed by the male bird on the roof with every demonstration of delight. The eggs were hatched at last, and I fully intended to carry off the young family with one or both of the parents, but on a Monday morning we found the birds had flown, and ever since I have looked upon the Blue Wren not only as a little lord of creation, but as a veritable sultan in his domestic habits."

A correspondent ("Yonka"), writing from Sandy Creek, via Bullumwood, Gippsland, says:—"In May last year (1894) we pitched our camp on Merrijig Creek (eight miles from here), and after a week or so the feathered tribe undoubtedly came to the conclusion that we were eminently respectable, and deigned to call on us—particularly the Wren family. Then they were all of one colour, and I remarked to my mates upon the absence of the blue-headed one, he being my particular desire in my "shanghaeing" days of the Christmas vacation. But behold! at the opening of spring, with the wattle bloom's arrival, we noticed one of the flock going about like an old gentleman with a dirty blue muffler on. He became a curiosity, and we had great opportunities of examining him, as the flock passed our camp on the way down to the creek every morning, returning again in the afternoon. We vulgarly termed them our poultry. As the weather warmed he assumed a more distinct guise, and about the end of September became a perfect little gem. The hen birds would call in at the camp, but the Sultan, as we christened him, held aloof with a decided coldness in his demeanour. Then, about in the bush, the Blue-headed Wren became quite an ordinary every-day affair until the winter months came on, and not one could be found. At this spring time I was fully alert to notice the changes, and though removed to another part of the creek, I soon discovered a track, and most honestly assert that in two particular parties have I seen the change in the male bird week by week, until he has now on his full uniform and is a perfect picture. It is astonishing to what an extent 'familiarity breeds contempt,' or, I should say, blindness, for not one of our men bred in the country had ever noticed this change until attention was drawn to it.

"I quite hold with Mr. Holroyd's idea that our Blue-headed friend is a Mormon."

"S. J. F." writes:—"A bird whose habits are not known to many is our beautiful Blue Wren. He always has four brown wives—never more, never less. They live in perfect harmony together, as the following anecdote will show:—About a month since, a boy employed by me caught

a male bird in an unoccupied cottage, about half-a-mile from where I live. He brought it to me, but I saw that it had been injured in the catching. I thought, however, that if I put it in a cage for a few days, it would recover, and then I could let it go. I put it in a cage and hung the cage on the wall outside. In less than a quarter of an hour his four little wives had found him. They made a great fuss, and evidently could not understand his not being able to join them. They remained on the cage some time and then flew away. I thought they imagined that, as he could not get out, it was no use waiting, and so left him to his fate. But I was wrong, for in a very short time they all returned, each carrying some choice morsel in her bill, which was carefully put between the bars of the cage. This they continued to do until evening. At daylight next morning I found them all seated on the cage, but alas! the husband was dead. They did not leave the cage until I took his body out. I placed it on a log of wood, and it was pitiable to see those dear little wives trying by all the means in their power to rouse him. I thought the kindest thing to do was to bury their dead out of their sight, which I did, but it was many days before the faithful wives left the vicinity."

"Neno's" contribution from South Gippsland is:—"Referring to the Blue Wrens, I am inclined to believe that the male of this assumes a plain dress in the winter. When collecting, I would as soon think of beating the heath for snipe in June as looking for a full-plumaged Wren in that month. At nesting time a single male bird generally has quite a harem of plain-coloured mates. The Wrens have a peculiar habit of calling out should anything unusual happen in the forest. The sudden flight of a Hawk, or the falling of the limb of a tree, immediately catches their attention. Often at night, when flight-shooting by a lonely lagoon, I have heard the report of my gun answered from some neighbouring bush by a faint silvery trill, as if to say, 'I am here and listening.' The Wrens become very familiar with bushmen, and may be seen running about the tent floor like mice."

To Mr. Holroyd now belongs the credit of having first placed on record that the beautiful Blue Wren is a polygamist, or at all events, he has established that more than one female, to a nest, assists in the incubation. However, it has yet to be proved that more than one bird lays in the same nest—a statement I have doubts about. I never recollect flushing a male bird from the nest, therefore it is possible that at times one female may relieve the other at sitting, if the male does not share in that task. On the matter of Wrens I have just turned up some M.S. notes on birds left for my use by Mr. Hermann Lau, a German naturalist of keen observation, who spent many years in Australia, but has now returned to the land of his birth. Referring more particularly to the Wrens on the Darling Downs (Queensland), he says:—"Many are the varieties of these singularly handsome little chaps: I know of three on the Downs, viz., Blue Wren (*M. cyaneus* ?), Lambert's Wren (*M. lamberti*), and Black-headed or Orange-backed Wren (*M. melanocephalus*), all of them differing in colour, but partaking of the same habits. What is said of one may allude to all. The perfect wedding dress of the male bird (the female is attired in the sombre hue of brownish-grey) can be seen only in his third

year (query, A. J. C.) Speaking again of the *Malurus*, he is a polygamist, having two, three, or sometimes four wives. Only once have I seen the reverse. It was on the banks of the Severn River, 1880, where one female enjoyed the company of two husbands, one clad in blue and the other in red."

Besides the breeding months above mentioned, the Blue Wren occasionally lays as late as March.

The picture of the "Nest of the Blue Wren" is taken from an example that was prettily situated in a flowering bush.

138.—MALURUS CYANOCHLAMYS, Sharpe.

SILVERY-BLUE WREN.

Reference.—Proc. Zool. Soc., p. 788 (1881).

Previous Description of Eggs.—North: Proc. Linn. Soc., N. S. Wales, vol. ii., 2nd ser., p. 406 (1887).

Geographical Distribution.—Queensland and New South Wales (probably).

Nest.—A dome-shaped structure with an entrance in the side; constructed of dried grasses intermingled with spiders' webs; lined inside with feathers, hair, &c., and placed in a thick bush close to the ground (North).

Eggs.—Clutch, three to four; fleshy-white, sprinkled all over with pale reddish-brown markings, sometimes forming a coalesced patch on one end. Dimensions in inches of a full clutch: (1) $\cdot 68 \times \cdot 5$, (2) $\cdot 68 \times \cdot 5$, (3) $\cdot 67 \times \cdot 48$, (4) $\cdot 66 \times \cdot 51$ (North).

Observations.—The Silvery-blue Wren is the northern variety of the Common Blue Wren, having been separated from that species by Dr. Sharpe. Specimens of this Wren were obtained in the Herbert River district, North Queensland, also the examples of eggs from which Mr. North took his description, and which were stated to have been collected as far back as November, 1868, or thirteen years before the bird received its specific name. I have been loaned a skin of the Silvery-blue Wren, collected by Mr. H. P. C. Ashworth, at Roma.

Could himself evidently overlooked this variety, for it was out of his collection that Dr. Sharpe took the type, which was labelled—"Moreton Bay, F. Strange." The male of the Silvery-blue Wren has the bright-coloured parts of his plumage painted *silvery* cobalt instead of the *deep* cobalt as seen in *M. cyaneus*. It is possible that the lighter-plumaged bird is also found in the Northern portion of New South Wales, to the west of the Dividing Range.



NEST OF THE BLUE WREN

From a Photo by the Author.



139.—MALURUS GOULDI, Sharpe.—(186)

LONG-TAILED BLUE WREN.

Figure.—Gould. Birds of Australia, fol., vol. iii., pl. 19.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 287.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 321 (1865); North: Austn. Mus. Cat., p. 113 (1889).

Geographical Distribution.—Tasmania, and Furneaux Islands.

Nest.—Very similar to that of the Blue Wren (*M. cyaneus*); composed of fine soft grasses, sometimes mixed with wool and mosses; lined with fur and feathers, and usually placed in a low bush, in grass, or in rushes.

Eggs.—Clutch, three to four; inclined to oval in form; texture of shell very fine; surface glossy; colour, white, with a pinkish tinge, moderately blotched or spotted with reddish-brown or rufous, the markings being thickest about the upper quarter. Dimensions in inches of a proper clutch: (1) $\cdot 72 \times \cdot 52$, (2) $\cdot 72 \times \cdot 51$, (3) $\cdot 72 \times \cdot 51$.

Observations.—This fine Wren may be considered an insular form of the ordinary Blue species; its habitat being Tasmania, and the Furneaux Group, in Bass Strait. The Long-tailed species is reported to have been taken in Victoria and South Australia, but I doubt it. The Long-tailed Blue Wren may be distinguished from the common Blue bird by its slightly larger size and darker shade of blue.

I took a nest of this species at Ridgeside, Tasmania, October, 1883. Again I renewed acquaintance with the species on Flinders Island, where I bagged examples, for museum purposes, flying in the short thick scrub between the boulders of granite near the sea shore.

Breeding months from September to January or February.

140.—MALURUS ELIZABETHÆ, Campbell. (*See Appendix.*)

DARK-BLUE WREN.

141.—MALURUS MELANOTUS, Gould.—(187)

BLACK-BACKED WREN.

Figure.—Gould. Birds of Australia, fol., vol. iii., pl. 20.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 288.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1145 (1886); North: Austn. Mus. Cat., pl. 13, fig. 19 (1889), also Rep. Horn Scientific Exp. p. 77 (1896).

Geographical Distribution.—Interiors of Queensland, New South Wales, Victoria, and South Australia.

Nest.—The usual form, somewhat loosely constructed, with the top-side entrance not well defined; composed of soft bark and wool; lined inside with grass and wool. Usually situated about a foot from the ground in a low bush, brush fence, &c.

Eggs.—Clutch, three to four; oval in shape, or more compressed at one end; texture of shell fine; surface glossy; colour, warm or pinkish-white, fairly and rather boldly blotched and spotted, thickest on the apex, with pinkish-red or chestnut and purplish-brown. Dimensions in inches of a proper clutch: (1) $\cdot 68 \times \cdot 48$, (2) $\cdot 68 \times \cdot 47$, (3) $\cdot 67 \times \cdot 48$, (4) $\cdot 64 \times \cdot 48$.

Observations.—This exceedingly handsome Wren is an inhabitant of the interior of Queensland, New South Wales, Victoria, and South Australia. Gould first obtained it in the timber belts of the Murray, in South Australia, and states it is a most interesting species, inasmuch as it possesses characteristics intermediate between *M. cyaneus* and *M. splendens*, having the blue belly and the conspicuous pectoral band of the latter, with the black back of the former.

During a visit to the Mallee (Wimmera) district, Victoria, in October, 1884, I took three nests with three eggs each of a gaily-dressed Blue Wren in the short scrub that grew on the bull-oak (*Casuarina*) belts which interspersed the Mallee growth. I was uncertain then whether the birds belonged to this fine species or not, being unable to secure one, and, moreover, they, the males at all events, avoided too close an inspection (I had left my gun at home). Probably the species was the Black-backed Wren, more especially as lately (season 1898) a party consisting of Dr. Charles Ryan, Mr. Charles French, junr., and my son Archie, were collecting in the same region, and brought back birds (two males and one female), together with two sets of eggs, having seen no other variety of Blue Wren throughout the trip. One proud male was observed threading the bushes with four little females in his wake. The nest and eggs, from which I have taken my descriptions, were found in a dead brush fence.—Date, 14th October, 1898; locality, Pine Plains.

It is recorded in the Australian Museum Catalogue that the late Mr. K. H. Bennett procured several nests and eggs of the Black-backed Wren in the neighbourhood of Ivanhoe and Mossgiel, in the interior of New South Wales, during the months of October and November, 1885 and 1886. Mr. K. Broadbent also records this bird from Charleville district (Queensland).

142.—MALURUS CALLAINUS, Gould.

TURQUOISE WREN.

Figure.—Gould: Birds of Australia, fol., supp., pl. 23

Reference.—Cat. Birds Brit. Mus., vol. iv, p. 289

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1145 (1886); North: Austr. Mus. Cat., pl. 13, fig. 18 (1889).

Geographical Distribution.—New South Wales (interior), South and West Australia.

Nest.—Resembles in construction and situation those of the other interior species of the genus.

Eggs.—Clutch, three to four; oval in shape, blunt; texture of shell very fine; surface glossy; colour, white, with a slight pinkish tinge, finely freckled, and especially round the apex, with reddish-brown. Dimensions in inches of a proper clutch: (1) $\cdot 67 \times \cdot 49$, (2) $\cdot 65 \times \cdot 48$, (3) $\cdot 64 \times \cdot 49$.

Observations.—Of this superb and exquisitely-dressed interior dweller Dr. Ramsay remarks:—"This Wren, one of the largest species described by Mr. Gould, is far from rare in the interior, my brother, Mr. James Ramsay, having no difficulty in obtaining as many specimens as I required during one season, both of nests and eggs, with the birds shot therefrom."

This bird greatly resembles the Black-backed Wren, but may be distinguished from it by the lighter-coloured (turquoise) blue coat. However, the darker blue upon the chin and throat is the same in both kinds. Some of the desert or more western birds have a still lighter-coloured turquoise-blue head and mantle, the shade exactly figured in Gould. An interesting question arises here. To which species (*Melanotus* or *Callainus*) does the intermediate coloured bird belong? If to neither, then there is a third variety, or *Melanotus* and *Callainus* must be united.

For the knowledge of the existence of this most lovely species, Gould was indebted to the late Mr. S. White, of Reedbeds, near Adelaide, who informed him that he was under the impression it was a new species the moment he saw the first example, and was therefore induced to shoot and skin eight or ten others of both sexes, all of which, with the exception of two males, Mr. White had the misfortune to lose in crossing Spenceer Gulf. The birds were procured in the saltbush country, about three hundred or four hundred miles north-west of Adelaide. Gould proceeds further to state that, in Mr. White's experience, the males were very shy, and those secured were obtained by a kind of ruse, namely, by Mr. White placing his hat on the ground and hiding himself among the bushes until curiosity prompted the beautiful birds to examine the unusual object.

By a strange and, to me, most pleasing coincidence, Mr. W. White (brother of the late Mr. S. White, mentioned by Gould) kindly sent for my collection two clutches of Turquoise Wrens' eggs (one accompanied by a male bird) taken near Port Augusta, South Australia, December, 1883, and August, 1895, respectively.

The history of the type specimens collected by Mr. White is surrounded with thrilling interest. The collector went specially after *Ephthianura* (both the red and yellow varieties, and secured specimens of each kind) when he made the discovery of the beautiful Turquoise Wren. Somehow, on the return journey (at the head of Spenceer Gulf), the boat he was using with a make-shift sail of a blanket capsized in a squall. Guns, ammunition, and all specimens were lost in the sea, except a small box containing the Wren skins, which Mr. White had presence of mind to snatch up, and, after swimming and floating with it for nearly three miles, he reached the shore in a terribly exhausted condition. Taking into consideration the adventure and discovery, had I been Gould, I think I should have called the new bird *Malurus whitei*.

143.—MALURUS SPLENDENS, Quoy and Gaimard.—(188)

BANDED WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 21

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 289

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 324 (1865).

Geographical Distribution.—South and West Australia.

Nest.—Oval, covered, with side-top entrance; composed of soft grasses and flowering portions and leaves of plants, in some instances not altogether compactly built; lined inside with *Zamia* (Cycad) "wool" and feathers or fine soft grasses. Usually situated near the ground in thick low scrub. External dimensions, 5 inches in length by $2\frac{1}{2}$ inches in breadth; entrance, about 1 inch across.

Eggs.—Clutch, three to four; inclined to oval in shape; texture of shell very fine; surface slightly glossy; colour, pinkish-white, freckled and spotted all over, but thickest on the apex, with rich reddish-brown; occasionally an example in a set has the markings nearly obsolete. Dimensions in inches of a proper clutch: (1) $\cdot67 \times \cdot49$, (2) $\cdot67 \times \cdot49$, (3) $\cdot66 \times \cdot48$. Most resemble those of the eastern Blue Wren (*M. cyaneus*).

Observations.—This lovely Wren, with exquisite blue plumage, enjoys chiefly a western habitat, but has been found in the interior of South Australia.

These resplendent little "Blue Birds," as the Westralians call them, are among the most pleasant of my West Australian recollections. The first bird that fell to my gun on landing in that territory was a Banded Superb Warbler or Wren which I obtained near Albany. Then, on the shores of Geographé Bay it was with mixed astonishment and delight I witnessed the lovely blue-dressed birds disporting themselves upon the beach and fossicking amongst the cast-up algæ and corallines. They scattered over the sandy ridges into a thick, short acacia scrub, whither I and a local bush acquaintance followed them in the hopes of finding a nest or two. Just entering the scrub, a hen-bird darted out of a bush containing the dome-shaped, grass-made home, lined with fine bark and sea-weed, but, alas! it was occupied with blind, yellow-gaped squabs, instead of with pearly, red-speckled eggs. When the sun had far sloped his "western wheel," throwing his glowing gleams upon the bright-green acacias, where families of the Superb Wrens were pouring forth with all their souls their little spirited songs, it was a perfect picture now and then to see a pretty cerulean form flash like a diadem upon a verdant bush, and I am afraid to state how often they proved tempting marks for a small charge of dust shot.

I had been seeking persistently but in vain at King George's Sound and Geographé Bay for eggs of the "Blue Bird." On the lower Swan River I obtained my reward threefold. On the limestone hills behind Fremantle, which are covered chiefly with a stiff-leaved scrub called *dryandria*, I found my first nest building in a thick *hakea* bush, and before I finally left the district I had the pleasure of taking from that nest a set of pearly speckled eggs for my collection; a second nest was found building in an *acacia* bush near the Point Walter slip-panels, from which eggs were also secured; while a third nest I detected was situated in a dead prickly *acacia*, and contained a pair of eggs. Not far distant from this last-mentioned nest I saw four beautiful male birds chasing each other through the scrub, and describing as they flew lovely circles of blue.

Breeding months chiefly October, November and December. The three nests I found with eggs were all taken towards the end of November.

144.—MALURUS LEUCOPTERUS, Quoy and Gaimard.—(194)

WHITE-WINGED WREN.

Figure—Gould. Birds of Australia, fol., vol. iii., pl. 25.

Reference.—Cat. Birds Brit. Mus., vol iv., p. 290.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol i., p. 332 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 49 (1882).

Geographical Distribution.—New South Wales, Victoria, South, West, and North-west Australia.

Nest.—Small, oval, covered, with side entrance near the top; composed of dead, greyish "barley"-grass, and lined inside with fur, wool, or other soft material. Usually situated in a low bush in open or plain country.

Eggs.—Clutch, three to four; roundish in form; texture of shell very fine; surface slightly glossy; colour, white, with a slight pinkish tinge, minutely freckled with purplish-brown, more thickly about the larger end. In other examples the markings are more blotched, and mostly upon the apex. Dimensions in inches of a full clutch: (1) $\cdot 6 \times \cdot 45$, (2) $\cdot 6 \times \cdot 46$, (3) $\cdot 6 \times \cdot 44$, (4) $\cdot 59 \times \cdot 45$; of a somewhat large pair: (1) $\cdot 67 \times \cdot 48$ (2) $\cdot 65 \times \cdot 47$.

Observations.—The White-winged Wren is one of the least of its family, and is restricted to interior localities, such as salt-bush and cotton-bush plains in New South Wales, Victoria, and South Australia. It has also been obtained at Point Cloates, near the North-west Cape. It is somewhat singular that Dr. Ramsay placed a query against this species for the West Australian column in his "Tabular List" of distribution. He had evidently forgotten that Quoy and Gaimard's type was taken on Dirk Hartog Island.

I first met with this blue and white feathered gem early one December, (1890), on the shores of the salt lakes, near Benjeroop, where the birds were numerous among the short, succulent plants (*Salicornia*) that clothed the place, and where I succeeded in finding three nests building, besides one containing a pair of fresh eggs.

Another season, in September, Mr. J. Gabriel and I sought for a clutch or two of their eggs in a cotton-bush plain, near Moulamein, New South Wales, where the birds were merry and noisy. The male birds simply delighted us with the radiance of their blue coats, enhanced by contrast with the snowy-white parts of their wings, as they fluttered over the bushes before us. However, we did not procure eggs, for all the nests we found were, without exception, rifled, and the bottoms partly torn out. We suspected those black villains, the Ravens, had done the mischief.

On 7th November, 1892, Mr. G. H. Morton, Benjeroop (Victoria), took two eggs from a White-winged Wren's nest from which four days previously he had abstracted a pair.

Breeding months September to December.

145.—MALURUS LEUCONOTUS, Gould.—(195)

WHITE-BACKED WREN.

Figure.—Gould: Birds of Australia, fol., supp., pl. 24

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 291.

Previous Description of Eggs.—Ramsay; Proc. Linn. Soc., N.S. Wales, vol. vii., p. 49 (1882).

Geographical Distribution.—New South Wales, South, West, and North-west Australia.

Nest.—Like that of all other members of the genus, a dome-shaped, oblong structure of fine grass, ornamented and mixed with cob-web and wool, and lined inside with cotton from the native cotton-bush, or the silky down from the seed pods of an asclepiad. Placed in a small tuft of coarse grass near the ground, at other times among the lower branches and grass at the base of a cotton-bush. Dimensions, $5\frac{1}{2}$ inches in length by $2\frac{1}{4}$ inches in breadth (Ramsay).

Eggs.—Clutch, three to four; inclined to oval in shape; texture of shell very fine; surface slightly glossy; colour, white, with the slightest tinge of pink, spotted and finely-blotched fairly all over, but more thickly on the apex, with chestnut or reddish-brown. Dimensions in inches of a clutch: (1) $\cdot 65 \times \cdot 45$, (2) $\cdot 62 \times \cdot 45$, (3) $\cdot 6 \times \cdot 44$.

Observations.—This Wren is another desert gem, or interior species, with a habitat (excepting Victoria) nearly the same as that of the White-winged variety, with which it has been confounded by some collectors. The White-backed Wren has been obtained by Mr. Tom Carter as far

west as Point Cloates, where he shot one after a hurricane, and Mr. Keartland subsequently reported he had noticed it in various localities throughout the north-west desert.

The eggs in my collection are part of a full clutch of four taken from a grass-made nest, lined with wool and situated in a cotton-bush, at Cooper Creek, 24th March, 1887. Therefore it would appear that the White-backed Wren, according to the season, sometimes lays in autumn as well as the usual months of September to December.

146.—MALURUS ELEGANS, Gould.—(189)

RED-WINGED WREN.

Figure.—Gould Birds of Australia, fol. , vol. iii, pl. 22.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 291.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i. p. 325 (1865).

Geographical Distribution.—West Australia.

Nest.—Dome-shaped or covered, with comparatively large side entrance near the top; constructed of grass, together with occasionally thin pieces of tea-tree (*Melaleuca*) bark, and lined inside with feathers. Usually situated low, in grass or other herbage or in a bush.

Eggs.—Clutch, three to four; colour, delicate flesh-white, freckled with spots of reddish-brown, which are much thicker at the larger end. Dimensions in inches: $\cdot 67 \times \cdot 5$ (Gould).

Observations.—I also enjoy pleasant recollections of this beautiful western dweller. Unlike the Banded Wren, it seems to prefer the rank herbage of moist forest situations. After many adventures with snakes in such suggestive localities I only succeeded in finding two nests. In one instance I was too late for eggs, and in the other too early. Near Hamelin Harbour, on the 26th October, 1889, I found the first nest, so artfully hidden in grass and protected by the raised portion of a fallen limb, that I had to search the locality on three occasions before I discovered the nest, which contained young. In the other instance, on the 9th of the following month, near Quindalup, I detected birds carrying material to construct their nest in the most romantic of localities—a native garden of pink boronia. A secluded gully occurred in the forest, through which meandered a creek, partly hidden by finely-foliaged kunzea trees, starred with small white flowers. These trees in turn protected the flowering spikes of a boronia plant some six or eight feet high, at the base of which the future home of the graceful Wrens was being constructed in rushes. Happy birds!

Breeding season September to the end of the year.

147.—MALURUS LAMBERTI, Vigors and Horsfield.—(191)

VARIEGATED WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 24

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 292.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1146 (1886); North: Austn. Mus. Cat., p. 113 (1889).

Geographical Distribution.—Queensland, New South Wales, and Victoria (?).

Nest.—Very similar to that of the Blue Wren (*M. cyaneus*).

Eggs.—Clutch, three to four; nearly oval in shape; texture of shell very fine; surface glossy; colour, white, with a few blotches or spots of dull-red about the upper quarter. Dimensions in inches of a clutch: (1) .65 × .48, (2) .64 × .48, (3) .63 × .47.

Observations.—Gould was of the opinion that the Lambert Wren would prove a more local species than the common Blue Wren. Its range is Eastern Australia down to about the Sydney side, its place towards the west being taken by *M. pulcherrimus*, to which it is nearly related, and with which it may easily, and has probably been, confounded. I procured *M. lamberti* in the Big Scrub, New South Wales.

The Variegated Wren is one of the few common birds of Australia of which Gould was unable to find the nest. However, Dr. Ramsay first found it on the 16th September, 1860, while the eggs in my collection were taken by Mr. W. T. Bailey, in South Queensland, from a nest prettily ensconced in ferns. Date, 24th November, 1888. A nest found at Coomooboolaroo (Q.), with a full complement of eggs, September, 1886, had one example pure white.

The general breeding months are from September to December.

148.—MALURUS AMABILIS, Gould.—(192)

LOVELY WREN.

Figure.—Gould: Birds of Australia, vol., supp., pls. 21 and 22

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 293.

Previous Description of Eggs.—Nil.

Geographical Distribution.—Northern Territory and North Queensland.

Nest.—Similar to those of the other members of the genus.

Eggs.—Clutch, three; round-oval in shape; texture of shell very fine; surface slightly glossy; colour, white, sparingly and faintly speckled with chestnut or dull-red, the majority of the markings being on the apex. Dimensions in inches of a pair: (1) $\cdot 62 \times \cdot 47$, (2) $\cdot 61 \times \cdot 48$. Most resemble those of the Orange-backed Wren (*M. melanocephalus*).

Observations.—This extreme northern Wren is simply called "Lovely" because there is no other name to describe its beauty. I believe I saw this beautiful bird in the Cardwell Scrubs; if so, that would probably be its southern limit.

The male most resembles the graceful Red-winged Wren (*M. elegans*) of West Australia, but the matured female differs from those of all the known species of the genera by her gay colouring, though not so beautiful as the male, her upper surface being blue and the under fawn-coloured.

M. hypoleucus, Gould, folio, Supplement, plate 22, represents the young male and the adult female of the Lovely Wren (*M. amabilis*), which were inadvertently described by Gould as a new species.*

The type specimen of the Lovely Wren was collected at Cape York, 1849, during the surveying of that locality by H.M.S. "Rattlesnake." I saw several perfect examples from the precise locality collected by Mr. Harry Barnard in 1896.

However, the eggs in my cabinet I received through the goodness of Mr. Dudley Le Souëf, who secured several sets from the Bloomfield River district, and also a female, in spirits, to complete identification.

Breeding months October to February.

149.—MALURUS PULCHERRIMUS, Gould.—(190)

GILBERT VARIEGATED WREN.

Figure—Gould: Birds of Australia, fol., vol. iii., pl. 23.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 294

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 326 (1865); North: Proc. Linn. Soc., N.S. Wales, vol. iii., 2nd ser., p. 415 (1888).

Geographical Distribution.—Victoria, and South-west, and North-west Australia.

* Regarding his mistaken deductions, Gould afterwards gave an explanation at the end of the introduction to his folio *Supplement*, upon the evidence of Mr. James Cockerell, the collector. As some persons still entertain doubt about *M. hypoleucus* being the female of *M. amabilis*, the following field note by Mr. Harry Barnard may be of interest:—"When at Cape York, I always noticed one of the chestnut-shouldered Wrens with several of the bluish ones, and took them to be male and female. I only found one nest, which had three young birds. The nest was built in a small shrub about a foot from the ground, and was found by a bluish bird flying out of it. While I was examining the nest, the bird was calling out, and in a few seconds one of the beautiful chestnut-shouldered ones flew up. When I left, the birds were sitting together on a small shrub."

A nest of *M. amabilis* in Mr. D. Le Souëf's collection is constructed of dry grass and an abundance of whitish thistle-like down, and lined inside with fine grass. It measures 6 inches in length by $3\frac{1}{2}$ inches in breadth, and was placed in a broad-leaved bush.

Nest.—Similar to those of other members of the genus, being a dome-shaped structure, outwardly composed of long thin strips of bark, matted together with spiders' cocoons, and lined inside with soft downy seeds of a composite plant (North).

Eggs.—Clutch, three; oval in form; colour, white, sprinkled all over the larger end with reddish-brown markings. Dimensions in inches: (1) $\cdot 68 \times \cdot 48$, (2) $\cdot 68 \times \cdot 45$ (North).

Observations.—Of the Wrens there is still another western beauty—the Gilbert Variegated, with a more interior and north-western range.

On the 28th October, long ago, in the vicinity of the Wongan Hills, Gilbert found a nest placed on the upper branches of a species of hakea, about four feet from the ground. The nest contained a pair of newly-laid eggs.

In connection with a nest in the Macleayan Collection, Mr. North states it was found by Mr. W. W. Froggatt, on the 25th January, 1888, in a low bush on the Napier Range, about one hundred miles inland from Derby.

Hitherto the furthest east that *M. pulcherrimus* has been recorded is the interior of South Australia (Captain Sturt). I venture to state we have it also in Victoria, in the Mallee district. In 1884, I shot a specimen (now in the collection of Mr. Joseph Andrews, Melbourne,) there, and recently (September, 1899), when on a collecting excursion to the same locality with Messrs. C. A. and A. Smart, others were procured—one in particular having the whole of the crown of the head blue, as figured by Gould, but not with the "intense indigo-blue" throat. The throat and breast are "deep-black," as described in the British Museum Catalogue. Should there really be a bird in the South-west with an indigo throat, then there is also a black-throated variety between it and *M. lamberti* in the east. Mr. Tom Carter has procured exactly similar birds to the Victorian near the North-west Cape. Some of the males of *M. pulcherrimus* wear a dingy brownish cap, as generally seen in *M. lamberti*. The only difference I can distinguish between the two is the more violet shade of blue of the former bird.

The two nests I found in the Mallee were close to the ground, built of dead, weather-beaten strips of bark and grass, and lined with finer material, feathers, &c. Dimensions: length, 7 inches; breadth, 4 inches; entrance, 1 inch across. One nest contained eggs nearly incubated, the other young birds, which I made squeak, when two hen birds and a male appeared, the latter having an insect in his mouth.

150.—MALURUS CORONATUS, Gould.—(193)

PURPLE-CROWNED WREN.

Figure.—Gould: Birds of Australia, fol., supp., pl. 20.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 295.

Geographical Distribution.—North-west Australia and Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—The nest and eggs of this rare north-western Wren are still unknown, but doubtless when discovered they will be found to resemble those of the other members of this interesting and beautiful genus.

Respecting the bird, Gould says:—"Charming as are many of the smaller Australian birds, I think the present species is entitled to the palm for elegance and beauty, not only among the members of its own genus, numerous and beautiful as they really are, but among all other groups of birds yet discovered; the charm, too, is considerably enhanced by the great novelty in the style of colouring, for in how few birds do we find the lovely lilac tint that encircles and adorns the head of this bird! A similar tint, it is true, appears in the nape of the Bower Birds (*Chlamydodera*), but I scarcely know of a third instance."

151. MALURUS DORSALIS, Lcwin.—(197)
M. cruciatatus, Gould.

RED-BACKED WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii, p. 27.

Reference—Cat. Birds Brit. Mus., vol. iv., p. 296.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 403 (1882); North: Trans. Roy. Soc., S.A., vol. xxii., p. 140 (1868); Le Souéf: Victorian Naturalist, vol. xvi., p. 65 (1899).

Geographical Distribution.—North-west Australia, Northern Territory, and North Queensland.

Nest.—Small, oval, with side entrance near the top; composed chiefly of fine grasses, shreds of bark, with a small quantity of leaves and cocoons added, and lined with fine grass. Usually placed low in bush or herbage. Dimensions, 5 inches in length by $2\frac{1}{2}$ inches in breadth; entrance, $1\frac{1}{4}$ inches across.

Eggs.—Clutch, three to four; stout oval in form; texture of shell very fine; surface glossy; colour, pearly-white, moderately spotted and blotched with chestnut or reddish-brown, thickest about the apex. Dimensions in inches of a proper clutch: (1) $\cdot62 \times \cdot46$, (2) $\cdot6 \times \cdot45$, (3) $\cdot59 \times \cdot45$.

Observations.—The number of these birds that frequented the rank grassy situations near our camp at Cardwell, North Queensland, pleased us much. The blood-red back, set in velvety-black, of the male bird, was so striking to the sight. The Red-backed Wren would appear to be the tropical or northern form of the Orange-backed variety or *vice versa*.

A nest I found, with young, in the vicinity of Townsville, 15th September, 1885, was, I believe, referable to the former bird.

Dr. E. P. Ramsay has called the Red-backed Wren found in the north-west *M. cruentatus-boweri*. As to the validity or not of this variety the student must judge for himself by referring to the Doctor's references, namely, Proc. Linn. Soc., N.S. Wales, vol. i., 2nd series, pp. 1089 and 1100.

The Red-backed Wren is probably found as far south, on the west coast, as the North-west Cape. Respecting the bird in its north-west habitat, in the "List of Birds" collected by the Calvert Expedition, Mr. G. A. Keartland writes:—"This delicate but gorgeous little bird was first noted near the junction of the Fitzroy and Margaret Rivers. Although usually found in long grass and undergrowth, it occasionally resorts to the larger trees, and one specimen was shot from a branch fifty feet high. It is very tame and easily approached. Unlike most species of this genus, the present species usually constructs its nest some distance from the ground. Those found by Mr. Wells and myself were located in either what is known as the peach-bush or the bauhinia-tree, and four to ten feet from the ground. The nests are built of fine dry grass, with a rather large opening near the top. The clutch of eggs, three or four in number, show considerable variation in colour and markings, but they have usually a fleshy-white ground, more or less spotted with red, which in some cases forms a zone."

Breeding months, September to April.

152.—MALURUS MELANOCEPHALUS, Vigors and Horsfield.—(196)

ORANGE-BACKED WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii, plate 26.

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 296.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); North: Austr. Mus. Cat., p. 117 (1889).

Geographical Distribution.—South Queensland and New South Wales.

Nest.—Oval, dome-shaped, with side-entrance near the top; composed of grass, and lined inside with finer grass, thistle-down, &c. Usually situated in grass or other herbage. Dimensions, $4\frac{1}{2}$ inches in length by $2\frac{1}{2}$ inches in breadth; entrance (oval), $1\frac{1}{2}$ inches by 1 inch across.

Where Cape gooseberry plants exist this Wren invariably uses an admixture of skeletons of the outer covering of the berries in the construction of its nest.

Eggs.—Clutch, three to four; roundish in form; texture of shell very fine; surface slightly glossy; colour, white, lightly blotched and spotted about the apex with chestnut or reddish-brown. Dimensions in inches of a proper clutch (Queensland): (1) $\cdot 61 \times \cdot 46$, (2) $\cdot 6 \times \cdot 48$, (3) $\cdot 57 \times \cdot 47$; of a full set (New South Wales): (1) $\cdot 65 \times \cdot 47$, (2) $\cdot 65 \times \cdot 46$, (3) $\cdot 63 \times \cdot 47$, (4) $\cdot 61 \times \cdot 48$.

Observations.—This brilliantly-coloured Wren, with its orange-scarlet back, is a very conspicuous species, especially when the bird is seen on the wing or even at rest on a bowing stalk of grass.

It is found chiefly in the southern half of Queensland; also in the northern portion of New South Wales.

In October, 1885, I found a nest in a tussock of grass at Coomooboolaroo, containing young. Previously, however, I had fortunately received eggs, which I duly described, from the owner of that station. A nest was taken at Coomooboolaroo on the 26th of March, 1896.

Gould obtained several pairs of the Orange-backed Wren in the valleys under the Liverpool Range, but, although it was the breeding season, he did not succeed in finding a nest. Dr. Ramsay secured the first authenticated nest and eggs of this species, at Lismore, Richmond River, on the 12th November, 1866. The discovery, however, was not recorded till twenty-three years afterwards.

Breeding months, end of July or August to February.

FAMILY—TURDIDÆ: TRUE THRUSHES.

SUB-FAMILY—SYLVIINÆ: WARBLERS.

153.—ACROCEPHALUS AUSTRALIS, Gould.—(246)

REED WARBLER.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 37.

Reference.—Cat. Birds Brit. Mus., vol. v., p. 100.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i. p. 402 (1865); North: Austr. Mus. Cat., p. 169 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, South Australia, and Tasmania; also Lombok (A. R. Wallace).

Nest.—Cup-shaped, deep; outwardly composed of long, soft, pliable stems of aquatic plants, woven and intermixed with swamp débris, roots, &c.; usually firmly secured on four or five reeds standing in water. Other examples are composed of a mass of dark-coloured roots; lined inside in either case with a goodly supply of clean yellowish grass, chiefly the soft tops of flowering portions. Dimensions over all, 3 to 3½ inches by 3¼ to 4 inches in depth; egg cavity, 1½ to 1¾ inches across by 2 inches deep.

Eggs.—Clutch, three to four; swollen oval in shape; texture of shell close and fine; surface glossy; colour, greyish or greenish-white, faintly spotted, in other instances boldly blotched, with roundish markings of amber or olive of different shades, and grey. Dimensions in inches of a proper clutch: (1) .83 × .61, (2) .82 × .6, (3) .79 × .6; of a smaller-sized set: (1) .7 × .54, (2) .7 × .54, (3) .69 × .53. (Plate 9).

Observations.—The Reed Warbler is an intensely interesting bird, ranging down Eastern Australia to Victoria and Tasmania, but coming and going mysteriously in the southern parts of its habitat.

Besides being a migrant, the Reed Warbler, as its name indicates, is a merry and cheerful songster, not only by day but by night, its song being quite canary-like. As the bird betakes itself to sedgy sides of rivers and to reeds and rushes of swamps, one cannot always see the birds in such secluded coverts, but their presence or arrival may always be ascertained by hearing their loud merry warbles.

When I first came to Armadale, not far distant from my house there used to be an abandoned brick quarry, partially filled with water, wherein flags grew. Here one or two pairs of Reed Warblers found a secure retreat. Often have I loved to listen to their lively voices, especially at evening, and sometimes through the night.

The following are some promiscuous dates of the arrival of Reed Warblers in the vicinity of Melbourne:—

Season 1886.—Birds heard at Yarraville, 1st September. On the 21st, others heard at Caulfield swamp, where none were present the previous day.

Season 1890.—First birds heard at "Como," on the Yarra, end of August or beginning of September.

Season 1895.—Birds heard on the Yarra, 22nd September.

Season 1896.—First heard on the Yarra, near Toorak, 9th September.

Season 1897.—First heard on the Yarra, near Toorak, 9th August.

In the Bendigo district, Dr. W. Macgillivray has noted the Reed Warbler early in August.

My data referring to the Reed Warblers' departure are not so complete. I recollect examining one nest containing young, apparently not many days' old, on the 28th January (1895). Nine days afterwards, or on the 6th February, they had flown. February is the month the Warblers commence to retire northward. It was noticed in the neighbourhood of Toorak, that during the second week of that month (in 1897) the birds left the river for the shrubs in the gardens close by before finally taking their departure, which was apparently accomplished by the last week of the month.

On a balmy summer day it is a glorious experience for the enthusiastic egg collector, after donning a pair of old pants and boots which will as readily let water out as in, to walk through the sedges of a swamp. He quickly gets lost to view in the tall ranks of thick reeds, which he parts with first one hand and then the other, proceeding slowly, not unfrequently floundering into a hole, and consequently finding himself suddenly up to his arm-pits in the cooling water. Now and again a nest is espied, about two feet above the surface of the water, built on a few upright flags, and containing two, three, or four, as the case may be, of the familiar greyish, brown-mottled eggs.

On the margins of the Yarra, near Melbourne, some of the Reed Warblers, on account of the absence of reeds, suspend their nests in the drooping green tresses of willows that hang over the river. As a rule, the Reed Warbler builds over water, but instances are known where nests have been observed on dry land, perhaps fifty paces from water, in herbage, such as flowering stocks of dock-weed, &c.



REED WARBLER'S NEST.

From a Photo by the Author.

The first eggs are usually laid about the middle of October. At the height of the breeding season Reed Warblers appear to build their nests very rapidly. On the 24th November (1888), I visited a strip of sedges in a favoured locality and found two or three nests building. Going through the same sedges eleven days subsequently I examined no less than fourteen nests containing a total of thirty-eight eggs, mostly fresh, or an average of 2½ per clutch.

Respecting the Reed Warbler in a more northerly habitat, I possess Mr. Herman Lau's note from South Queensland. He says:—"Reed Warbler—one of our best singers, in all respects like its European cousin—lays three eggs. Sings during incubation at all times, even during the night. Comes to Queensland in the latter end of August, and leaves, after rearing two broods, in February. Took eggs at Tummaville, twelve miles south of Yandilla, 1868."

The illustration, although conveying a fair idea of the nest, is hardly a successful photograph.

154.—ACROCEPHALUS LONGIROSTRIS, Gould.—(247)

LONG-BILLED REED WARBLER.

Figure.—Gould: Birds of Australia, fol., vol. iii, pl. 38.

Reference.—Cat. Birds Brit. Mus., vol. v., p. 99.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 403 (1865).

Geographical Distribution.—West and North-west Australia.

Nest.—Similar to that of the eastern species, or, according to Gould, cup-shaped; composed of soft skins of reeds and dried rushes, and placed on four or five upright reeds, at about two feet from the surface of the water.

Eggs.—Clutch, three to four; colour, dull greenish-white, blotched all over, but particularly on the larger end, with large and small irregular-shaped patches of olive, some being darker than the others, the lighter-coloured ones appearing as if beneath the surface of the shell. Dimensions: .75 × .63 (Gould).

Observations.—The Long-billed Reed Warbler of Western Australia is the representative of the merry Reed Warbler of eastern parts, and is the larger bird of the two species.

As in the days of Gilbert, so now, the Long-billed Reed Warbler may be found in the dense reed beds bordering the rivers and waters around Perth. Like its eastern prototype, it rarely shows itself above the reeds.

I have a particularly pleasant recollection of hearing the cheerful voices (very like our own species) of these birds when I was duck shooting with Mr. R. H. Cowan, Boxing Day, 1889, on the Greenough River, at Wabbagee, about twenty miles from Champion Bay. Being then late in

the season, together with the excitement of shooting ducks, it did not occur to me to wade in and explore the reed beds for Warblers' nests. I have regretted only once—that is, ever since—that I did not do so, because I should have most certainly found nests of some late breeding birds.

To-day the eggs of this Western Warbler are still among the *desiderata* of my collection.

In Western Australia the Long-billed Reed Warbler commences laying, as Gilbert has told us, in August and September, and is apparently an earlier breeder than its eastern cousin.

SUB-FAMILY—TURDIDÆ: THRUSHES.

155.—*GEOCICHLA LUNULATA*, Latham.—(275)

GROUND THRUSH.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 7.

Reference.—Cat. Birds Brit. Mus., vol. v., p. 155.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 440 (1865); Ramsay: P. Z. S., p. 110 (1875); Campbell: Southern Science Record (1882); North: Austr. Mus. Cat., p. 171 (1889).

Geographical Distribution.—New South Wales, Victoria, and South Australia.

Nest.—Large, open, beautiful; outwardly composed of green moss, dried leaves, grass, &c., matted together with earth or sand; lined inside with a thick ply of grass, sometimes with pieces of rushes and rootlets added. Usually situated on a thick limb or fork of a coastal tea-tree (*Leptospermum*) or banksia, in a swamp tea-tree (*Melaleuca*) by a creek, or in a mossy musk or other tree in the mountains, but always sheltered by thick scrub. Dimensions over all, 8 to 10 inches by 5 or 6 inches in depth; egg cavity, $2\frac{3}{4}$ inches across by 2 inches deep.

Eggs.—Clutch, two to three; true oval in form; texture of shell fine; surface glossy; colour, light warmish-green, spotted and blotched, usually all over, with reddish or rufous-brown, intermingled with cloud-like markings of dull-red. Dimensions in inches of proper clutches: A (1) $1.33 \times .9$, (2) $1.32 \times .92$, (3) $1.31 \times .92$; B (1) $1.29 \times .87$, (2) $1.28 \times .86$, (3) $1.24 \times .86$. (Plate 9).

Observations.—The true home of this lovable bird is the great forest region and coastal scrubs of South-east Australia.

My associations with the Mountain Thrush, or, more strictly speaking, Ground Thrush, have been of the most pleasant and interesting kind; therefore if I have wandered too much into detail in giving my observations on this bird, please "skip," and put down to excessive enthusiasm on my part.



NEST OF THE GROUND THRUSH.

(From a Photo by the Author.)

The bird may be called Mountain, for it is a lover of the fern gullies and musk-tree thickets of the hilly tracts. But it has been in the tea-tree groves of the coast where I have most cultivated its acquaintance.

On the eastern shore of Port Phillip, after passing St. Kilda, patches of tea-tree (*Leptospermum*), greater or smaller in extent, occur at intervals until Mordialloc is reached. Here density commences in real earnest, and constitutes almost an unbroken margin to the eastern portion of the bay. In these dense brushes, if carefully sought for, may be seen the Ground Thrush—a timid, modest creature—"at home."

In October this great belt of living *Leptospermum* is a mass of white flowers, so dense that in some sheltered nooks the warm grey foliage and seed cups are barely visible. The aroma from the flowers is like the perfume of new honey.

Lovers of nature, poets, and others, in all lands, usually connect the wedding garment of spring with the nesting of birds. And so it is, as a rule; but the nesting of the Ground Thrush is one of the interesting but not altogether unique exceptions among our Australian birds.

In the bleak and frosty months like July, the Ground Thrush commences to construct its nest, or re-build by making additions to a former old home. In cases where nests are used by the birds season after season, they become a goodly size, and the foundations have a venerable, moss-grown appearance. Some of these favourite old homes measure a foot across, while the actual cup of the nest would only measure half that dimension by two or three inches deep.

A favourite situation for the nest is about twelve feet from the ground in the fork of an upright tree, in the centre of a thick clump or scrub, growing in a hollow or dip between the ancient sand drifts, where about the base of the trees is scattered dead and decaying timber among dwarf and sparingly-grown bracken. Another favourite locality for a nest is on a sand rise, about twenty paces from high-water mark, the nest being placed on a thick horizontal branch hidden with thick foliage; or another site is a darkened spot where the taller tea-tree tops meeting overhead, together with the closely-packed, twiggy, lichen-covered stems, quite subdue the light below. Another nest may be humbly situated within reach of hand. Yet again a secure resting-place for a nest may be chosen on a rough bulky limb of a banksia tree, if well protected with crowded tea-tree scrub.

The nests are perfect models of bird architecture, beautifully proportioned and tastefully decorated with verdant moss—fit subjects for pictures (see illustration). The eggs also are gems for beauty, being of a delicate light-green, mottled with purplish-red. A triplet of eggs may be found once in every two or three nests, the balance being in pairs.

As stated, the eggs are generally deposited in winter. One wonders how it is possible for the little naked young to survive the raw months. But let a person enter these dense tea-tree scrubs, and he will be astonished at the mildness of the atmosphere there, for the density of the timber and foliage seems to exclude the keenest wind, neither does the frost harden the ground.

Sometimes the earliest birds lay about the end of June; a few

during July. Perhaps about one-fifth of the young are hatched by the end of that month; but from the first to the middle of August the majority of the birds lay.

Although the Ground Thrush is such an early breeder there are exceptions, as with other rules, in its case. Once in the middle of September I saw a nest with three eggs, supposed to be a second clutch of birds previously robbed in the locality, although I do not think they all lay a second time during the season if their nest is interfered with.

Mr. J. Gabriel furnished me with two authenticated notes of late nests with eggs, seen in the Dandenongs. One was towards the end of November, the other 20th December. I also learnt of another nest having been taken 9th November, 1893, at Dandenong Creek.

In the young, feathers soon succeed down, and from the nest they assume the same coloured garb as their parents, the prevailing colour of which is olive-brown, darkest on the back and much lighter on the breast and flanks. With the exception of the wings, tail, and centre of abdomen, each feather has a lunar or moon-shaped mark of black at the tip; hence the specific name, *lunulata*. The beak and feet are horn-coloured, the former yellowish at the gape. The dark-brown eyes are full of meek expression. In fact, the bird's whole contour is captivating, more especially when seen with neck shortened on its moss-bedecked nest, or standing with partly drooping wings over its helpless fledgelings.

With other persons, including Gould, I used to fancy the one drawback in the nature of the Mountain or Ground Thrush was that it was dumb, save a few squeaky notes uttered when alarmed, or when the young was approached, when the bird hurried and flopped over the ground through the scrub, and at the feet of the intruder, making a feeble but sustained hissing whistle. But since, I have learned this Thrush is really a songster, which especially loves to sing "betwixt the lights" after the sun has gone down. Then the Thrush may be heard in a modest, subdued whistling song, as if to while away the interval of twilight. The music is interspersed with portions of song not unlike that of the English Thrush, but without the full and impassioned notes, being a melodious whistle of chiefly two notes, a slide about a third from one to the other, with trills and variations. Sometimes the bird sings at dawn.

Like most true Thrushes, the Ground Thrush loves to feed upon molluscs, but it is not averse to worms. A field observer told me how he once watched a bird gathering worms, presumably for its young. Pulling a worm out of the ground, the bird would hop silently about with the twisting captive in its bill until another was discovered. Dropping No. 1, No. 2 was hauled from its hole, then No. 1 was again picked up and No. 3 prospected for; and so on, the bird laying down its mouthful each time a fresh capture was to be made, until it had difficulty in keeping together about half-dozen wriggling worms. It would then finally fly away with the lot.

The greatest season I experienced amongst the Ground Thrushes was in 1886.

The following are my field notes:—

(1)—31st July.—Nest in upright tree, fairly thick scrub, in a dip with bracken, dead and decaying logs about. Eggs, two.

(2)—14th August.—Nest in thick stumpy tree, dense scrub and undergrowth on sandy rise. Eggs, two.

(3)—14th August.—Nest in stunted tree, dense small scrub on sandy rise near the beach. Eggs, two.

(4)—14th August.—Among very thick lichen-covered trees near the beach, several growing from one root. Nest on overhanging prong, moss plentiful on ground underneath springing through the dead tea-tree leaves. Eggs, three.

(5)—14th August.—In straight tree amongst a clump. Nest on underneath limb. Large banksia tree near. Eggs, two.

(6)—14th August.—In more open but clumpy scrub with thick grass about. Nest eight feet from ground. Eggs, two.

(7)—14th August.—In overhanging tree in comparatively open scrub; beautiful nest, perfect in shape, edged with pretty moss. Eggs, three.

All the foregoing nests were found after three hours' toiling in and out of a belt of scrub about half-a-mile in extent. The nests varied in height from six to twelve feet above the ground, and with the exception of No. 1, were all found building on the 31st July.

Giving the Thrushes a season's rest, I visited my favourite locality again in 1888. Result:—

4th August.—Saw fledged young flying with their parents.

4th August.—Saw nest building; completed apparently on the 11th, when I took eggs (three), which were slightly incubated.

4th August.—Nest in thick low tree. Three eggs partly incubated.

11th August.—Nest on overhanging limb. Eggs, three, fresh.

11th August.—Saw a nest in overhanging tree, containing three young which were flesh-coloured, with dark or black stripes along centre of back and down wings, with tufts of yellowish down. Birds probably fourteen days old.

All the above nests were in tea-trees.

15th September.—Saw Ground Thrush's nest with three eggs. Supposed to be second clutch of birds previously robbed. Heard some birds whistling melodiously at 6.15 p.m., or about twenty-five minutes after sun-down.

Season 1889:—

10th August.—Two nests with young about ten days old. Two building in banksias, and a third with one egg. These contained three eggs each on the 24th.

Season 1890:—

2nd August.—(1) Visited nest from which I took eggs previous year; contained three fully-fledged young. (2) Found another old nest being renovated; fortnight afterwards contained two eggs. (3) Nest with two fresh eggs. (4) Nest with foundation laid. (5) Nest with two eggs slightly incubated. (6) Nest destroyed by some enemy—bird or beast; one egg remaining. (7) An old nest examined; it contained two eggs on the 16th, when I heard birds whistling as sun was setting.

All these nests were in tea-tree, except No. 5, which was in a banksia.

After another year's respite the haunts of the Ground Thrush were again invaded in 1892 by a party, including Messrs. Le Souëf (three),

Mr. R. S. Sugars, my son, and myself, chiefly for the purpose of photographing, *in situ*, some of the beautiful homes. We found:—

30th July.—(1) A nest I had visited two seasons previously contained two eggs half incubated. (2) Nest with fully-fledged young. (3) Nest with two eggs, fresh. (4) Nest with two eggs, half incubated. (5) Nest with three eggs, fresh. (6) Two nests building. Fortnight afterwards (13th August) contained each three eggs. One of these nests made a most successful photograph.

To show how closely in some instances the various families of Thrushes live to each other, it may be stated that three of the above nests were not more than forty or fifty yards apart, and were situated at points so as to form a triangle in the scrub.

I give Mr. Lau's interesting notes of this bird near its northern limit in the sub-tropical scrub of South Queensland, which may be taken as referring to *G. heinii*:—

"*Geocichla lunulata* is an inhabitant of the gloomy cedar scrub along the sea coast, resorting near water and always hopping on the ground seeking among the moist débris for its food. Its colour resembles the European Song Thrush. The nest is not unlike that of the (home) Black Bird, and is situated in the first and thick fork of a tree richly bedecked with moss, and the outside covering being formed of the same material. The nest is not so easily detected, and only the bird flying from it betrays the convenient site. The lining consists of rootlets and dark fibre, abundantly to be found in such localities. The eggs also resemble those of the Black Bird. They number two or three.—Bunya Mountains, December, 1856."

An egg in Mr. D. Le Souëf's collection, collected by Mr. Lau, in South Queensland, is inclined to oval; texture fine; surface glossy; colour, pale bluish-white, finely and faintly spotted, thickest on the apex, with chestnut or rufous and dull purplish-brown. It is smaller and not so much marked as those of the southern birds. Dimensions: 1.12 × .79 inches. I venture to say this egg is probably that of *G. heinii*.

Mr. W. White, of South Australia, sends me a note of having taken a nest of the Ground Thrush on Mount Lofty, which is probably the extreme western limit of the bird's range. I looked in vain for a Ground Thrush in the great timber tracts of Western Australia.

156.—*Geocichla macrorhyncha*. Gould.

LARGE-BILLED GROUND THRUSH.

Reference—Cat. Birds Brit. Mus., vol. v., p. 156.

Previous Descriptions of Eggs.—Campbell: Nests and Eggs Austn. Birds (Manual) p. 28 (1883); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i, 2nd ser., p. 1147 (1886); North: Austn. Mus. Cat., pl. 11, fig. 1 (1889).

Geographical Distribution.—Tasmania and King Island, and Kent and Furneaux Groups, in Bass Strait.

Nest.—Large, open; composed chiefly of green moss; lined inside with a good ply of grass, and usually placed on a stump or thick limb of a tree in dense scrub. Resembles that of *G. lunulata* of the mainland.

Eggs.—Clutch, two to three, occasionally four; long oval in form; texture of shell somewhat fine; surface glossy; colour, delicate or light warmish-green, spotted and blotched all over with reddish or rufous-brown intermingled with cloud-like markings of duller red. Resemble those of the mainland variety, but are usually larger and perhaps more heavily marked. Dimensions in inches of a pair: (1) $1.4 \times .93$, (2) $1.35 \times .92$; of a clutch of three: (1) $1.3 \times .9$, (2) $1.28 \times .9$, (3) $1.27 \times .93$.

Observations.—This bird is the insular variety of the Ground Thrush of the mainland. Gould at first regarded the two birds as identical, merely stating that Tasmanian specimens are longer and have a more robust bill than those from Australia.

The larger bird exists on all the principal islands in Bass Strait, having been noted by the Field Naturalists' Club of Victoria on King Island (1887), Kent Group (1890), and Furneaux Group (1893).

On Kent Group, 1890, the Ground Thrushes are amongst my most pleasant recollections of our camping quarters on these lonely islands. Before sunrise we, who were awake, heard the matins of the Thrushes ascending in subdued, whistle-like tones from the scrubby hill behind our tents. Not till stilly eve were the soft notes again heard, as if the birds were then chanting low to the goodness of the closing day. We did not find nests, but eggs collected by the obliging lighthouse keepers followed us subsequently.

In Tasmania I found a single nest of the Ground Thrush, containing a clutch of eggs, one of which was only about half the normal size. The nest was apparently deserted, it being then October.

Like its mainland cousin, the Tasmanian Ground Thrush returns season after season to the site of an old nest, and is an early breeder. The eggs are sometimes found in the moss-encircled nests when snow is upon the ground.

Mr. G. K. Hinsby, writing under date July, 1884, says:—"I noticed the *Geocichla lunulata* are beginning to build. I have a nest from which I have taken more than a dozen eggs in three years. I saw the birds making it a little higher to-day. I expect to take three eggs from it in less than a fortnight from now."

Mr. A. E. Brent informs me this species occasionally lays four eggs, and cites an instance on the 24th September, 1893, when he took a nest containing four eggs in a gully in Mount Faulkner; also another which he took a few days later in the Grotto of the same locality. He has found eggs in June.

157.—*GEOCICHLA HEINII*, Cabanis.

RUSSET GROUND THRUSH.

Figure.—Seebohm: Monograph of the Turdidæ, pl. vi., fig. 1.

Reference.—Cat. Birds Brit Mus., vol. v., p. 157.

Previous Descriptions of Eggs.—Campbell: Victorian Naturalist, vol. xvi., p. 55 (1899); Le Souëf: Ibis, p. 458 (1900).

Geographical Distribution.—Queensland and New South Wales.

Nest.—Open; composed of green moss (*Meteorium*), matted with dark wire-like rootlets, and sparingly lined with rootlets, &c.; usually placed in a thick mossy fork or on horizontal limb in dense scrub. Dimensions over all, 7 inches by 4 inches in depth; egg cavity, $3\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two usually, probably three occasionally; oval in form; texture of shell fine; surface glossy; colour, beautiful delicate or pale-green, spotted and splashed with purplish-brown. The markings are moderately dispersed, excepting on the apex, where they are more numerous. Dimensions in inches of a proper pair: (1) $1.19 \times .82$, (2) $1.18 \times .85$.

These eggs are smaller and more greenish in their ground-colour than those of either of the southern varieties.

Observations.—Judging by the smaller and more greenish eggs of the Ground Thrush received from the Richmond River scrubs of New South Wales, it occurred to me they may possibly be referable to the northern variety, *G. heinii*. Therefore, I invoked the good services of Mr. Hy. R. Elvery to procure me a skin from the locality. By its decided russet-coloured plumage (on the upper surface) and other minor differences it is evidently *heinii*. Moreover, according to Seebohm, there is in the British Museum an example of *G. heinii*, taken still further south, at the Clarence River. The Bellenger River is probably its extreme southern limit, where it has been observed by Mr. S. W. Jackson.

Seebohm regarded *G. heinii* as "a very distinct species," while Gould, in the first instance, and speaking generally of the Mountain Thrush, merely recorded that "considerable variation exists in size and colouring of individuals from different districts." Would it not be interesting to secure a series of skins, from the Richmond scrubs to Tasmania, to ascertain if the three species—*heinii*, *lunulata*, and *macrorhyncha*, really grade or not into one common species?

Mr. Elvery informs me that the Russet Ground Thrush is shy and seldom seen except when quitting its nest. During field observations of three seasons he noticed ten nests, with eggs, between the months of September and January—apparently the limits of the breeding season for that locality at all events. In no instance were there more than two eggs in a nest.

Obviously, Mr. Lau's notes, quoted under *G. lunulata*, may be read in conjunction with *G. heinii*.

158.—*GEOCICHLA CUNEATA*, De Vis.

BROADBENT GROUND THRUSH.

Figure.—Seebohm: Monograph of the Turdidæ, pl. vii

Reference.—Proc. Roy. Soc., Q., vol. vi., p. 242.

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—There appears, according to that excellent collector, Mr. K. Broadbent, to be two representatives of the Ground Thrush in Northern Queensland. He writes:—"Of these, Hein's Thrush (*G. heinii*) is rare in the district, occurring at Herbert Gorge; and the second, Broadbent's Thrush (*G. cuneata*, De Vis), occurring at Herberton, constitutes one of my new discoveries. This is a larger bird than either of the other species of the genus, even including the southern species (*G. lunulata*), and is distinguished among them by this circumstance and the rufous colour of its under tail coverts. It is a true mountain-loving bird, though not to be met with on the mountains at the back of Cardwell. At Herberton even it was rather scarce; there it is especially active in wet weather towards sunset, when its mournful note is very noticeable. A clue to its habits may be found in the fact that I got bushed one night whilst pursuing it in the rain."

FAMILY—TIMELIIDÆ: BABBLING THRUSHES.

SUB-FAMILY—PTILONORHYNCHINÆ:* BOWER BIRDS.

159.—*PTILONORHYNCHUS VIOLACEUS*, Vieillot.—(276)

SATIN BOWER BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 10.

Reference.—Cat. Birds Brit. Mus., vi., p. 381.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883), and Nests and Eggs Austr. Birds, pl. 1, fig. 276 (1883), also Proc. Roy. Phys. Soc., Edin., vol. xiv. p. 13 (1898); Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1059, pl. 19 fig. 2 (1886); North Austr. Mus. Cat., pl. 11, fig. 6 (1889).

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest.—Open, shallow; somewhat loosely constructed of twigs; lined inside with leaves (*Eucalyptus*) and placed in a scrubby bush or tree, at

* This sub-family should be included in the *Paradisoidæ* (Birds of Paradise), and follow No. 57.

a height varying from about ten to thirty feet from the ground. Dimensions over all, diameter 7 or 8 inches by 5 inches in depth. (See illustration.)

Eggs.—Clutch, two to three; shape true oval; shell moderately fine in texture; surface glossy; colour varies from dark-cream to dirty-yellow, irregularly blotched and spotted with umber, cinnamon-brown, and a few purplish-grey markings. In some specimens the blotches are very bold, with the markings under the surface of the shell of a bluish-black shade. Occasionally there is a type with a lighter or paler coloured ground and smaller-sized markings. Others again have the markings more in the form of hieroglyphics. Dimensions in inches of a typical clutch: (1) 1.76 × 1.19, (2) 1.74 × 1.17. (Plate 9.)

Except for their larger size, the eggs in colour and character much resemble those of the Oriole (*Mimeta viridis*).

Observations.—The Satin Bower Bird—the male especially beautiful by reason of his lustrous blue-black coat and lovely violet eyes—is an inhabitant of the forests, more particularly of the coastal region, of Eastern Australia, from Northern Queensland down to the Cape Otway forest, Victoria.

Some seasons Satin Birds are very destructive in the gardens and orchards, eating clover, especially the flowers, English grass, cabbages down to the very root, and fruit. The late W. B. Bailey, Pimpama Nurseries, South Queensland, informed me of an instance in which he had about three acres of mandarin oranges stripped in a week. The birds are also fond of sweet potato tubers. I noticed at Mr. Bailey's residence a very handsome male bird which he had in captivity. It was in its youthful coat of mottled-green when he first obtained it. It is interesting to learn that this bird did not don its full livery of blue-black till the fourth year.* The bird was an excellent mimic, could talk, and imitate well the mewing of a cat.

It is somewhat remarkable that, notwithstanding the Satin Birds are plentiful locally, the eggs are exceedingly rare in collections. On the 23rd November, 1883, my friend Mr. Lindsay Clark found, near the Bass River, Western Port, a nest of the Satin Bird containing a rare prize—a pair of fresh eggs. Mr. Clark described the nest as being placed about twelve feet from the ground, in a scrubby bush, loosely constructed of twigs, &c., and lined with leaves; on being removed from its position it fell to pieces.

* Since this statement was published in the "Proceedings of the Royal Physical Society" (Edinburgh), Mr. A. A. C. Le Souéf, Director of the Zoological Gardens, Melbourne, has kindly favoured me with the following:—"I think this particular bird must have been of mature years when Mr. Bailey first got it, as many years ago I caged a number (at least a dozen) of these birds at the gardens here, young green birds, caught at Gembrook, and it was only after the expiration of nearly eight years they began to change colour. I think four or five birds put on the beautiful blue-black plumage, and in a year or two died off. It is, therefore, evident that the birds only come to their full plumage in old age, and that accounts for the fact that in a flock of say one hundred birds, which we often used to see at Gembrook, some years ago, there would be only a very few, not half-a-dozen black ones among them. They die off shortly after the change."



NEST OF THE SATIN BOWER BIRD.

From a Photo by S. W. Jackson.

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NEST OF THE SATIN BOWER BIRD.

A most remarkable instance, and one fortunate for myself, happened the following season. Mr. Clark went Mutton Bird (*Puffinus tenuirostris*) eggng on Phillip Island, when it occurred to him to visit the mainland again in the neighbourhood of his Satin Bird's nest of the previous season. The result was that he found another pair of eggs, which are now in my collection.

I never enjoyed the opportunity of taking a nest of the Satin Bird, but at Christmas-tide, 1884, I saw a perfect bower on the north shore of Lake King, Gippsland. The structure was situated in a cleared space upon the ground, amongst some bracken in open forest. The cleared space was twenty-six inches across, the bower or avenue being in the centre of this space. The two parallel tapering walls of twigs were about twelve inches high, by a breadth of ten inches, and were six inches apart. The walls were somewhat curved, arching towards the top. The chief decorations within the bower, and round about, were the gay feathers of the Crimson Parrakeet (*Platyercus elegans*)*.

It is stated that the first bower of the Satin Bird that Gould saw was in the Sydney Museum. He succeeded in conveying it to England. The illustration I have given is from a picture by Mr. D. Le Souëf, taken at Mallacoota Inlet.

The Satin Bird's eggs which Dr. Ramsay described in the Proceedings of the Zoological Society (1875) were of an abnormal type, if referable to that bird at all, hence his excuse for redescribing (and rightly so) two well-authenticated sets collected by Mr. Ralph Hargrave, at Wattamola, New South Wales.

Dr. A. E. Cox, Sydney, informed me that about the middle of October, 1876, at Mittagong, New South Wales, he found a nest of the Satin Bird situated on the top of a tea-tree (*Melaleuca*) stump, containing two eggs which were nearly incubated.

From Mr. K. Broadbent's interesting articles on the "Cardwell Birds," I take this extract:—"The Satin Bower Bird (*Ptilonorhynchus violaceus*) was observed at the Herbert River Gorge, and quite commonly in the Herberton scrubs. In the latter locality it occurred in company with the Spotted Cat Bird (*Eluredus maculosus*), and the Tooth-billed Bower Bird (*Tectonornis denti-rostris*), and Newton's Bower Bird (*Prionodura newtoniana*); in fact, I have seen all these four species feeding in the same tree. These Satin Birds, as they are more popularly designated, may be often met with during the month of May in the open, along the edges of the scrubs, feeding upon the tops of young ferns. I have seen flocks of two hundred or more, composed in large proportions of plain-coloured mottled birds, with about ten or twelve dark or deep blue-coloured individuals amongst them."

Regarding this Bower Bird in Southern Queensland, I take from Mr. Hermann Lau's MS. the following:—

"*Satin Bird*.—The sea-coast scrubs are its haunts. Now and again it comes out to the open forest to feed upon the berries of the mistletoe,

* Mr. I. W. De Lany informs me that he has only noticed blue feathers at bowers. His wife, by way of experiment, put out several pieces of coloured wools near the house, and only the blue ones were taken to the bower

or on the figs in gardens. Its agreeable note is a clear whistle from tenor down to bass. While the male bird is clad in a beautiful shining coat of dark-blue, with eyes and base of bill to match, the female has only a simple (olive-green) attire. The females, with probably immature males, have been seen in flocks far from their summer abode.

"Before nesting begins, the birds build up a play-ground (bower). The finest bowers are nearly in all cases on the sunny side of a lying log, the ground being strewn with moss, flowers, yellow and blue Lory Parrots' feathers, small bones, and snail-houses, for about a yard in diameter. In the middle is erected a bower about eighteen inches in height. When completed, several birds of both sexes run round and through the archway or avenue, picking up, in their joy, some of the nesting (? bower) materials and tossing them about, and we may guess, in their own way, choose partners.

"As I was watching one day at Cunningham Gap, a fine male bird with a withered fig-leaf in its bill, turning it over, became a prey to me. Half a mile away from the spot I found the nest (but no eggs), ten feet from the ground, in a small scrub tree. The nest was made of dry sticks, and lined with dry leaves, and was rather shallow. Later, when residing in the Bunya Mountains, I had the satisfaction of getting again a nest with two eggs (usual complement), ten feet from the ground.—Date, January, 1887."

I conclude with a brief account of a successful nesting outing that Mr. S. W. Jackson enjoyed amongst these fascinating birds. The notes, which Mr. Jackson was kind enough to write specially for me, are as follow:—

"On December 23rd, 1896, I started from South Grafton and proceeded on my bicycle towards Cloud's Creek, some fifty-nine miles distant, in hopes of finding some good eggs in the scrubs in those parts. However, on reaching my destination, after a good day's riding on my machine, which was heavily loaded with tent, camera, rations, &c., I pitched my camp, and afterwards had a stroll among the oak trees (two species of *Casuarina*). In answer to the cries or calls of the Satin Bower Bird, I walked about fifty yards from my camp, and was forced to stop at an oak tree, my notice being called to a female Bower Bird which flushed out from a cluster of mistletoe in the tree. On climbing, I found a nest carefully concealed in the mistletoe, which contained three fresh eggs. The nest was constructed of similar material, &c., to that of the Black-throated Butcher Bird (*Cracticus nigrigularis*), only lined with leaves of the spotted eucalyptus instead of small twigs.

"I carefully emptied the nest of its contents, but unfortunately the nest could not be removed, on account of the sticks of the same being so intermingled with the twigs of the mistletoe, the latter growing on a very thick limb. After making further searches, I succeeded in finding nine more nests, all of which were built in oak trees, and in same position as the first nest found, with the exception that four of them were built in the upright forks of the oaks, and not in the mistletoe as the remaining six were. In the nine nests found there were eggs in four of them, out of which I got one fresh set of two, and a few addled eggs, the balance of



PLAYGROUND OF THE SATIN BOWER BIRD.

From a Photo by D. Le Souef.

the eggs being too far advanced in incubation to be blown. The remaining five nests *all* contained young birds covered with down, and in one nest I found one young bird possessing four legs, and I regret I did not keep the curiosity, instead of placing it back into the nest.

"In all, I only procured seven eggs, which varied much in size and colour. Out of the ten nests found, the following is the detailed result:—

1	nest	contained	set	of	3	eggs	(fresh).
1	"	"	"	"	2	eggs	(almost fresh).
1	"	"	"	"	1	egg	(addled) and 1 bird.
4	nests	"	"	"	3	young	birds each
2	"	"	"	"	2	eggs	each (heavily incubated).
1	nest	"	"	"	3	eggs	(1 addled, 2 heavily incubated).

"The majority of the nests were one hundred or two hundred yards apart, at an elevation of about twenty to thirty feet, and mostly placed near the trunk of the tree, just where the smaller twigs branch off near the topmost part. The birds were very tame, and allowed their nests to be robbed without attempting to attack the intruder.

"I spent four days by myself in this wild bush, away from all civilisation, and tried my best to find more nests of the Bower Bird, but only succeeded in finding two old nests (perhaps last season's).

"While I was busily climbing up to one of the Satin Bird's nests, and when nearing the same, I got rather an unexpected shock at finding an iguana (a reptile about three or four feet long) eating, or starting to eat, one of the heavily incubated eggs. The ugly creature, in its sudden amazement, jumped on my head, and then descended to the ground. The feeling to me was very unpleasant, and of rather a rare nature."

The breeding months extend from October to January.

160.—*ELUREDUS MACULOSUS*, Ramsay.

SPOTTED CAT BIRD.

Figure.—Gould-Sharpe: Birds of New Guinea, vol i, p 38.

Reference.—Cat. Birds Brit Mus., vi., p. 385.

Previous Descriptions of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. iii, 2nd ser., p. 147, pl. 3, fig 2 (1888); Le Souëf: Proc. Roy. Soc., Victoria, vol. vii, new ser., p. 20 (1895); Campbell: Proc. Roy. Phys. Soc., Edin., vol. xiv., p. 21 (1898).

Geographical Distribution.—North Queensland.

Nest.—Open, bulky; outwardly composed of leaves and twigs, mixed with fine rootlets; lined inside with fine wire-like tendrils; usually situated near the top of a slender tree in dense scrub. Dimensions over all, about 9 inches by $4\frac{1}{2}$ inches in depth; egg cavity, $5\frac{3}{4}$ inches across by 2 inches deep.

Eggs.—Clutch, two to three, usually two; shape nearly true oval; texture of shell somewhat fine; surface glossy, and of a uniform cream-

colour. Dimensions in inches of a full clutch: (1)—a somewhat lengthened example— 1.7×1.06 , (2) 1.58×1.14 , (3) 1.47×1.13 ; of a clutch of two: (1) 1.58×1.03 , (2) 1.5×1.1 . (Plate 9.)

These eggs may be readily distinguished from those of the southern Cat Bird by their smaller size and lighter colouring.

Observations.—To Australia belong two species of this peculiar genus, the one under notice being the northern and smaller representative of the Cat Bird of New South Wales. The Herbert River, Mr. Broadbent remarks, would appear to be the southern limit of the Spotted Cat Bird.

My friend Mr. Dudley Le Souëf, who has also explored the palm scrubs of Northern Queensland—the domains of the Spotted Cat Bird—and to whom I am indebted for a pair of eggs, taken 27th October, 1893, says:—"The curious harsh note (not resembling the cat-like cry of the southern bird) of the Spotted Cat Bird was often heard in the scrub, and several nests were found. They appear to prefer building near the top of a slender tree, about fifteen feet from the ground, although on one occasion we found one within two feet, built on a creeper, but that was an exception."

The birds do not appear to be at all shy. Mr. Le Souëf saw one speared by a native in thick scrub.

Mr. North states that during an excursion to the Bellenden-Ker Ranges, Messrs. E. J. Cairn and Robert Grant, collecting on behalf of the trustees of the Australian Museum, succeeded in obtaining, among others, a fine series of Spotted Cat Birds in different stages of plumage, and, besides finding several nests with young birds, they were fortunate in obtaining a nest with two eggs. The nest and eggs were found in the fork of a small sapling, about seven feet from the ground, on the Herberton road, at a distance of thirty-two miles from Cairns. Both parent birds were secured at the time of taking the eggs, which were in an advanced state of incubation.

Breeding months August to January.

Although these two species of Cat Birds are included in the Bower Bird family, so far as observations have gone they do not build bowers, nor have any particular playing-places been noticed by observers. Perhaps they possess some insignificant playing-place—merely a bare spot of ground, with a few leaves placed thereon, like the play-ground of the Tooth-billed Cat Bird (*Tectonornis*)—or perchance the birds select a stump or log, which they frequent to play, like the Rifle Bird (*Ptilorhis*).

161.—ÆLURÆDUS VIRIDIS, Latham.—(277)

CAT BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 11.

Reference.—Cat. Birds Brit. Mus., vi., p. 385.

Previous Descriptions of Eggs.—North: Records Austn. Mus., vol. i., p. 3 (1891); Campbell: Proc. Roy. Phys. Soc., Edin., vol. xiv., p. 19 (1898).

Geographical Distribution.—South Queensland and New South Wales.

Nest.—Open, somewhat deep, with thick sides; outwardly composed of twigs and broad leaves holding the decomposed earthy matter of the nest-fern (*Asplenium nidus*); lined inside with fine twigs and rootlets; usually situated near the top of a sapling or small tapering tree, at a height of from four to twenty feet, sheltered by the densest scrub. Dimensions over all, 9 or 10 inches by 6 or 7 inches in depth; egg cavity, 5 inches across by 3 inches deep.

Eggs.—Clutch, two to three; shape inclined to oval; texture of shell somewhat fine; surface glossy, and of a uniform rich or dark-creamy colour. Dimensions in inches of a full clutch: (1) 1.76 × 1.24, (2) 1.75 × 1.23, (3) 1.72 × 1.23; of a pair: (1) 1.69 × 1.2, (2) 1.68 × 1.18.

Observations.—This most extraordinary bird is a denizen of the thick jungle-like scrub which clothes portions of the coastal regions of New South Wales and Southern Queensland.

During my visit (1891) to the "Big Scrub" of the Richmond River district, the peculiar voice of this bird was heard everywhere throughout the locality. The cry is a real cat-like "mew-mew," with a strong accent on the second "mew," as if someone had trodden on a cat's tail. I happened to observe a pair of birds "caterwauling" about a nest, which was situated some fifteen feet from the ground, in a small tree on the bank of Pearce's Creek. I climbed to the nest, only to be disappointed in finding a pair of young, clothed in down as black as ink, instead of a set of shapely, cream-coloured eggs.

My companion, Mr. W. T. Bailey, and I found several other nests of the Cat Bird in the course of construction, or ready for laying in, but we had to turn our backs on the Big Scrub without securing such coveted eggs. The nest of which the description is given above was felled by scrub-fellers, the contents of course being smashed. However, a pair of eggs, taken by Mr. James Gordon, soon followed me home. The nest was found in a young buoyong tree (*Tarrietia*), at a height of fifteen or sixteen feet from the ground.—Date, November, 1891. Subsequently, Mr. Bailey kindly sent me from the same district a lustrous set of three eggs, taken on the 23rd December, 1894.

The first authenticated finds of Cat Birds' eggs were by Mr. Henry R. Elvery, Richmond River (1881), and by my venerable friend Mr. Hermann Lau, South Queensland (1886). These finds were not reported at the time, and the credit fell to Mr. W. J. Grime for a nest and egg which he procured in the Tweed River district, and forwarded to the Australian Museum. The following is Mr. Grime's account, as given in the Records of that institution:—"On the 4th October, 1890, I was out looking for nests, accompanied by a boy. I left him for a little while to go farther in the scrub, and on my return he informed me he had found a Cat Bird's nest with two eggs, one of which he showed me, the other one he broke descending the tree. I went with him to the nest, and found the old birds very savage, flying at us, and fluttering along the ground. The nest was built in a three-pronged fork of a tree, about

fourteen feet from the ground. The tree was only four inches in diameter, and was in a jungle of light scrub, about fifty yards from the edge of open country. I felled the tree and secured the nest."

A fine figure of the nest is given in the Records.

From Mr. Lau's manuscript notes I take:—

"The name Cat Bird is derived from its lamentable noise, not unlike that of a cat, but more that of a crying child. In the dense scrub at Cooyar, a little south of the Bunya Mountains, the oft-repeated sound was aggravating to me, so, when I could get a glimpse of the bird, a gunshot made an end to my ghastly neighbour. It was in November, 1886, at Cunningham's Gap, where I happily found a nest five feet from the ground, between the triple fork of a young tree, and an exquisite nest it was. Half-way up from the bottom consisted of dry fig-leaves, beautifully fastened with twining rootlets, and stronger ones from the rim, and lined with dry grass and roots. Finding only one egg in it, I waited for two days more, when there were two. I concluded such to be the clutch. Although it is said that the Cat Bird makes a bower, I never saw one of its own, but several times have seen it poking about the bower of the Satin Bird."

Breeding months include from about the middle of September to January.

162.—CHLAMYDERA MACULATA, Gould.—(279)

SPOTTED BOWER BIRD.

Figure.—Gould: Birds of Australia, fol. iv., vol. iv., pl. 8.

Reference.—Cat. Birds Brit. Mus., vi., p. 389.

Previous Descriptions of Eggs.—Ramsay: P.Z.S., p. 605 (1874); Proc. Linn. Soc., N.S. Wales, vol. vii. (1882), also vol. i., new ser., pl. 19, fig. 1; Campbell: Southern Science Record (1883); North: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd series, p. 1157 (1886), also Austn. Mus. Cat., pl. 11, fig. 5; Campbell: Proc. Roy. Phys. Soc., Edin., vol. xiv., p. 23 (1898).

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.

Nest.—Flat, somewhat concave; loosely constructed of dead twigs or fine sticks; lined inside with finer twigs and grass; usually situated in a thick bush or tree in open forest country. Sometimes the nest is so frail that the contents may be seen through the structure from underneath. Dimensions over all of a good nest, 9 to 10 inches by 6 inches in depth; egg cavity, 4 inches across by 2 inches deep.

Eggs.—Clutch, two, occasionally three; shape inclined to oval, or long oval; texture of shell fine; surface slightly glossy; ground-colour light greenish-yellow. There are three distinct characters of markings, firstly, light-greyish blotches appearing on the inner surface of the shell; secondly,

small stripes or hair-like lines of light-sienna and umber, as if painted with a camel-hair brush, in every shape and size round the shell, principally zig-zagged latitudinally, but often taking longitudinal and other directions; and, lastly, over these a few darker and heavier stripes and smudges of umber. Both ends of the eggs are comparatively free from markings. Dimensions in inches of a proper clutch: (1) 1.64×1.04 , (2) 1.63×1.05 , (3) 1.55×1.04 ; a pair with more of the yellowish-white ground, and with both ends much freer from markings, measures (1) 1.57×1.06 , (2) 1.5×1.07 . (Plate 9.)

The eggs are very beautiful and most singular in appearance, resembling fine porcelain with hand-painted markings.

Observations.—The beautiful spotted Bower Bird is a dweller of the dry interior provinces.

In a Riverina timber-belt, how venerable and dark the cone-shaped pines (*Callitris*) appear, with every branch and branchlet, dead and living, bedecked with ornamental lichens! Their sombre character is relieved by the interspacing silvery, needle-like foliage of hakea trees of lower growth, bearing a crop of curiously-fashioned seed-balls; a species of acacia with short stiff leaves, and with wood not unlike the West Australian jam-wood for aroma, by its floral stores is celebrating "Yellow-haired September;" the quondong tree (*Santalum*), whose pendulous foliage chings like skirts about its dark rough stem, is also seen, besides other dwarf trees called by lengthy botanical names; while all around the rich, red ground, well-grassed, sparkles with the flowers of small white immortelles,—such is the home of the Spotted Bower Bird as I saw it once in spring.

There has been some discussion as to who first found the genuine eggs of the Spotted Bower Bird. I believe (and it is only my belief, without any direct proof, and therefore I am open to correction) that some of the earlier recorded finds, especially those on the coast of the northern portion of New South Wales, were none other than the eggs of the Regent Bird (*Sericulus melinus*). These coastal scrubs are the stronghold of the Regent Bird, whereas the Spotted Bower Bird, as I have stated, seeks generally the dry and arid parts of the interior. I have also the testimony of a keen observer in the former locality that the Spotted Bower Bird is scarce there. Moreover, nothing would be easier, at first sight, than to mistake a female Regent Bird for a Spotted Bower Bird when flushed from the nest. Probably the first discovered egg of the Spotted Bower Bird was obtained by Mr. A. N. Foot, in Queensland, and was exhibited by Dr. G. Bennett, of Sydney, at a meeting of the London Zoological Society, held 3rd June, 1873.

Another of the first authenticated eggs discovered of the Spotted Bower Bird was found by Mr. J. B. White, and described by Dr. Ramsay, *vide* Proceedings of the Zoological Society, 1874. The same year (1874) Mr. Hermann Lau discovered a nest of this Bower Bird near Whitstone, South Queensland. I shall quote his original and interesting note:—

"This bird makes for the fruit when it ripens in the garden, especially the figs. The scrub, where it comes from, grows on a sandy bottom in the neighbourhood of the station. In this scrub I several times espied the

bower of the bird, not like the edifice of the Satin Bird, which is closed on the top, but open. A cartful of bones*—the vertebrae of sheep predominating—pieces of glass, unripe wild fruit, even a shilling, sometimes betray the entrance of the bower.

"While bathing one afternoon in M'Intyre Creek, half-a-mile from the scrub, I observed a Bower Bird flying with a caterpillar in its bill. After dressing, I followed in the direction, and found its nest high in a tea-tree (*Melaleuca*) over the water, and, procuring a ladder, beheld two young in the nest. Eventually I took the nest and young home, feeding the young for two months, as long as the season lasted, but at last they died.

"At the same place (Whitstone) I again got a nest with two eggs. December, 1874. The nest represents small sticks, like that of a pigeon, but lined with grass, &c."

When Mr. Lau was returning to his fatherland, this particular nest and eggs found a secure resting-place in the beautiful collection of Mr. D. Le Souëf, at the Royal Park, Melbourne.

About the end of October, 1877, while searching for specimens along a billabong of the River Darling, not far from Wentworth, New South Wales, I found a nest, about twenty feet from the ground, near the top of a red-gum (*Eucalyptus*) sapling in a belt of timber. A bird (probably the hen) was sitting, and did not leave until I had climbed close to it. The nest was loosely composed of sticks and twigs, and lined inside with finer twigs and grass, and contained one fresh egg, the most remarkable for beauty and the wonderful character of its markings that it has ever been my fortune to find.

A nest of the Spotted Bower Bird was pointed out to me, from which a pair of beautiful eggs was taken on the 14th November, 1894. The nest was the usual frail structure, built at the height of about thirty feet from the ground, near the top of a pine tree (*Callistris*). The tree was situated about two hundred yards from a dwelling on Neimur Creek, Riverina, and was discovered by one of the lads tracking the bird while carrying a twig to construct its nest. The eggs, which are of a light-coloured type, are now in the collection of Mr. Joseph Gabriel, Abbotsford, Victoria.

The Spotted Bower Bird occasionally lays three eggs. Mr. R. Macfarlane, formerly of the Mallee Cliffs station, New South Wales, found a nest containing three eggs in a needle-bush (*Hakea*). While the specimens awaited a favourable opportunity to be sent to Melbourne for my collection, the station cook, it is supposed, took a fancy to them, for they somehow mysteriously disappeared. Again, Mr. W. L. Hutton, writing to me from Lessington, near Bourke, says:—"I saw three nests of the Bower Bird last season (1895), one of which had three eggs in it." In Queensland, Mr. W. B. Barnard found on 12th December, 1897, an exceedingly handsome set of three eggs, now in my collection. The following is Mr. Barnard's field note concerning them:—"I was travelling with a mob of cattle, and while coming through Moura run I found the nest in a sandal-wood tree, about fifteen feet from the ground. I could see the eggs through the nest from beneath. The old bird seemed

* Mr. Chas. McLennan at one bower in the Mallee district of Victoria counted no less than 1,320 bones.—A. J. C.

shy, as she would not come near. Later in the day I found another nest, but it contained three young half-fledged. This nest was in a brigalow (species of acacia), about thirty-five feet from the ground."

The note of the Spotted Bower Bird is somewhat harsh and scolding. But it is not generally known, nor has it been properly recorded, that these birds are accomplished mocking creatures, as several of my bush friends can attest. The Misses Macaulay, of "Bannockburn," Riverina, had one or two birds which, at certain seasons, regularly between ten o'clock in the morning and two in the afternoon, used to visit the pepper trees in the garden, where the birds were heard imitating the calls of the noisy Miner (*Myzantha*), Magpie (*Gymnorhina*), the Raven, but not quite so hoarsely, and Babblers (*Pomatostomus*); while the screech of the Whistling Eagle was so realistic as to cause a domestic hen and chickens to fly for cover, although no bird of prey was nigh. The Bower Bird also reproduces well the sound of a maul striking the splitter's wedge, and other familiar sounds, such as the mewling of cats, barking of dogs, &c.

Mr. G. H. Morton, of Benjeroop, relates an amusing experience regarding the mimicry of the Spotted Bower Bird. His neighbour had been driving cattle to a given place, and on his way back discovered a nest in a prickly needle-bush or hakea tree. In "threading" the needle branches after the nest, he thought he heard cattle breaking through the scrub, and the barking of dogs in the distance, and at once fancied his cattle had broken away, but could see no signs of anything wrong. He heard other peculiar noises, and glancing at his dog, as much as to say, "What does that mean?" he saw the sagacious animal, with his head partly upturned, eyeing a Bower Bird perched in the next tree.

Although Gould has cleverly described the bower of this species, and, moreover, succeeded in taking one to England, which is now in the British Museum, and other authors have mentioned these wonderful structures, without unnecessarily extending the present observations I may state that during our memorable "flood" trip through Riverina, September, 1893, Mr. J. Gabriel and I embraced the opportunity of examining on the Pine Ridges six of the avenues or playing-grounds—all apparently in use—of the Spotted Bower Bird. Some of these singular structures we successfully photographed. They were under bushes, usually the prickly bursaria, and consisted of a pair of parallel walls of sticks, grass, &c., stuck into the ground on end, and heaped about with bones, chiefly placed about either entrance. I give details of three of these bowers, which may be taken as types.

1. Under a clump of bursaria bushes, with thistles and other vegetation growing near—platform or approach larger at one entrance. Space immediately around the bower and centre of avenue-like walk composed of dead twigs, well trampled down. Exterior portion of walls composed of twigs; interior side of walls composed of yellowish grass stalks, with the seedling parts uppermost. Number of bones—leg bones, ribs, and vertebræ of sheep—ninety at one entrance, ninety-two at the opposite. Inside the bower were twenty-four bones. Other decorations inside and round about were—pieces of glass, twenty-four; hakea seeds, thirty; quondong (*Santalum*) seeds, four; and green pine branchlets, two.

2. At the edge of the mallee (species of *Eucalyptus*) scrub, under bursaria bushes, with pines and bull-oaks (*Casuarina*) near. Bones placed just at entrances; bower somewhat open, and concaved towards the centre of the floor; built principally of a species of coarse tussocky grass and casuarina needles or foliage. (See illustration.)

3. Situated under native hop bush, and slightly curved in shape; principally constructed of coarse tussocky grass and casuarina needles, with a few branching twigs placed outermost. Usual heap of bones at either entrance, also bits of glass, quondong, hakea, and other seeds, portions of pig-face weed (*Mesembryanthemum*), pieces of Emu egg-shell, &c. In centre a handful of bones (fifteen) and quondong seeds (eight).

Statement showing the dimensions in inches of three ordinary-sized play-grounds or bowers of the Spotted Bower Bird:—

Total Length of Play-ground.	Length of Bower.	Breadth of Bower from Outside Walls.	Width Inside.	Height of Walls.	Thickness of Walls.
62	17	20	6-7	15	5-6
42	18	16-17	7-8	12	4-5
63	27	27	6-9	10-12	8-9

Lost jewellery, coin of the realm, &c., have often been recovered at bowers. It is said that any decorations of the bower by human hands is resented by the birds, the items, however beautiful, being thrown out. However, if the bones, &c., belonging to the bower be scattered, the birds will always gather them together again.

It has also been stated, but I have not been able to verify it, that this Bower Bird discriminates colours, and that it will carry nothing of a bright-red nature to its play-ground.

With reference to Gould's *C. occipitalis*, Dr. Ramsay, who has examined the type, pronounces it to be only a fine-plumaged adult male of *C. maculata*.

163.—CHLAMYDERA GUTTATA, Gould.—(280)

YELLOW-SPOTTED OR GUTTATED BOWER BIRD.

Figure.—Gould: Birds of Australia, fol., supp., pl. 35.

Reference.—Cat. Birds Brit. Mus., vi., p. 390.

Geographical Distribution.—West and North-west Australia, Northern Territory, and Central Australia.

Nest and Eggs.—See Appendix.



PLAYGROUND OF THE SPOTTED BOWER BIRD.

From a Photo by the Author.

Observations.—Gould was indebted to Mr. F. T. Gregory, the West Australian explorer, for the first specimen of this little-known species from North-west Australia.

The bird is spotted, like *C. maculata*, but differs in the guttations of the upper surface being larger in size and more distinct, the abdomen being buff, and the shafts of the primaries a richer yellow. Subsequently, Sturt, on his trans-continental journey, met with the bird, and lately (1894) the Guttated Bower Bird was again reported in Central Australia by the Horn Scientific Expedition.

A valued correspondent, Mr. Tom Carter, found a Bower Bird near the North-west Cape, which, I believe, is referable to this species.

In reference to this bird's supposed playing-bower, Gould quotes from Sir George Grey's "Travels," in which that author writes:—"This very curious sort of 'nest,' which was frequently found by myself and other individuals of the party, not only along the sea-shore, but in some instances at a distance of six or seven miles from it, I once conceived must belong to a kangaroo, until I was informed that it was a run or playing-place of a species of *Chlamydotera*. These structures were formed of dead grass and parts of bushes, sunk a slight depth into two parallel furrows in sandy soil, and then nicely arched above. But the most remarkable fact connected with them was that they were always full of broken sea-shells, large heaps of which protruded from each extremity. In one instance, in a bower the most remote from the sea that we discovered, one of the men of the party found and brought to me the stones of some fruit which had evidently been rolled in the sea; these stones he found lying in a heap in the nest, and they are now in my possession."

164.—CHLAMYDERA NUCHALIS, Jardine and Selby.—(278)

GREAT BOWER BIRD.

Figure.—Gould. Birds of Australia, fol., vol. iv p. 9.

Reference.—Cat. Birds Brit. Mus., vol. vi, p. 391.

Previous Descriptions of Eggs.—Le Souëf: Ibis, p. 359 (1899), also Victorian Naturalist, vol. xvi., p. 66 (1899).

Geographical Distribution.—Northern Territory and North-west Australia.

Nest.—Open, lightly built of twigs and without lining. Dimensions over all, 8 inches by 5 inches in depth; egg cavity, 4 inches across by 2 inches deep. Usually situated at a height varying from ten to fifteen feet above the ground, in a tree in open forest (Le Souëf).

Eggs.—Clutch, one, probably two; inclined to oval in form; texture fine; surface glossy; colour, greyish-green, moderately streaked and smeared all over with olive-brown or umber, with underlying marks of dull-grey. The singular markings are short, and not so linear or hair-like as seen in those of *C. maculata*, or even in its near ally, *C. orientalis*. Dimensions in inches: (1)—type—1.8 × 1.18, (2) 1.69 × 1.11, (3) 1.62 × 1.2.

Observations.—This exceedingly fine species is the western ally of the Queensland Bower Bird (*C. orientalis*), and the largest of its genus.

Captain Stokes, in the "Discoveries of Australia," mentions the remarkable bowers of this bird, which he had seen at the Victoria River. To Mr. H. H. Johnston, of the Survey Office, Western Australia, I am obliged for photographs he took of a fine bower at Cambridge Gulf. The structure was about thirty inches through the avenue, which was about eighteen inches wide at either end, and with walls about the same dimensions in height. The bower was built of fine twigs, and heaped about, principally at the entrances, with bleached shells. The centre of the avenue also contained a few shells and stones.

The late Mr. Bowyer-Bower obtained bowers and birds in the Derby district, which unfortunately were lost, with many other valuable specimens, when his tent took fire.

Specimens of the birds, nests, and eggs, which I was kindly permitted to examine, were collected on the Katherine River, Northern Territory, during the season 1898-9, by Mr. E. Olive, for Drs. C. Ryan and W. Snowball and Mr. D. Le Souëf. They were described by Mr. Le Souëf in the "Victorian Naturalist," as well as in the "Ibis," the following interesting field note by the collector appearing in the former journal:—"These birds were fairly plentiful, and I saw several at their bowers. The bowers were all similar to each other, with one exception, and that was not open on the top, but arched right through. I noticed one getting built. At first the sticks were laid on the ground for a foundation, and then all the other sticks were stood in between them. Every time they came to play they brought fruit, bones, shells, or stones. I found a revolver cartridge in one of the bowers. The birds were shy, and when they have a nest will not go near it all day if anyone be about. They were inquisitive, for if a person sat still near fruit trees on which they feed they would come within two feet of him. When going to fruit trees they fly one after the other."

The original eggs (one in each nest) were taken respectively 9th October, and 18th and 19th November.

165.—CHLAMYDERA ORIENTALIS, Gould.

QUEENSLAND BOWER BIRD.

Figure.—Gould-Sharpe. Birds of New Guinea, vol. i., pl. 44.

Reference.—Cat. Birds Brit Mus, vi., p. 392.

Previous Descriptions of Eggs.—North: Victorian Naturalist, with figs. (1896); Campbell: Proc. Roy. Phys. Soc., Edin., vol. xiv., p. 31 (1898).

Geographical Distribution.—North Queensland and Northern Territory (probably).



PLAYGROUND OF GREAT BOWER BIRD.

From a Photo by H. H. Johnston.

Nest.—Flat, slightly concave; loosely constructed of coarse twigs, and lined with finer twigs; usually placed in a small tree or sapling in scrub. Dimensions over all, 8 to 10 inches by 4 inches in depth. Usually placed at a height of about ten to twelve feet from the ground, in open forest country.

Eggs.—Clutch, two; shape, roundish oval; texture of shell fine; surface glossy; colour, light greenish-grey, curiously but moderately streaked with wavy line-like markings of umber, olive-brown, and light-slate. The majority of the markings take a latitudinal direction, crossing and recrossing each other, while some of the heavier lines take longitudinal or various directions. There are also a few fancifully-shaped dark blotches here and there over the shell. Dimensions in inches of odd examples: (1) 1.68 × 1.12, (2) 1.57 × 1.16; of a clutch much marked all over, including both ends, with the extraordinary hair-like lines: (1) 1.52 × 1.12, (2) 1.54 × 1.1.

Observations.—This very fine bird inhabits Northern Queensland, probably extending its range into the Northern Territory. It would, indeed, be interesting to learn, as Mr. North remarks, where the eastern and north-western races—*C. orientalis* and *C. nuchalis*—meet.

Mr. Kendall Broadbent obtained the Queensland Bower Bird during September at Herbert Vale. He also met with it at the Herbert Gorge, and although he found this bird at Bowen and near Townsville, it is the Gulf of Carpentaria district that seemed to Mr. Broadbent to be the bird's true home, for nowhere did he meet it more plentiful than at the mouth of the Norman River. It was at this river that Mr. Broadbent collected the interesting group of birds and bower which may be seen in the National Museum, Melbourne. Eight males and twelve females were shot at the bower.

The following original notes I have received from Mr. Ed. Cornwall, Burdekin River district, relative to this Bower Bird:—"I think I have discovered a new trait in the character of the Queensland Bower Bird. They are very plentiful about Rosencath Garden, and are very destructive to the crops; chillies, paw-paws, granadillas, guavas, mangoes, peas,—in fact, every description of fruit suffers to a greater or less extent from their depredations. But their last object of attack proves them to be not entirely vegetarians, unless new-laid eggs be called diet for non-eaters of flesh! This is not mere supposition, but hard fact, for after noticing the disappearance of eggs in a most unaccountable manner for some time, the gardener kept watch, and was rewarded by seeing Mr. Bower Bird fly straight to a nest vacated by a fowl, and deliberately devour its contents. This may not be a remarkable incident, but to me it certainly appeared strange."

Again writing, Mr. Cornwall says:—"Re the Queensland Bower Bird, since writing you last I have had further evidence to convict this rogue of what I charged him with. A bird was seen to fly right to the fowl's nest in an empty shed, and immediately afterwards emerge with an egg in its long claws. But it proved rather an awkward burden, for the bird dropped it ere he had gone many yards."

Again the same correspondent favours me:—"I very often come across their playing-bowers. Two years ago they built a very fine one on the roof of the verandah of this house. I was not living here then, but have often seen the birds playing about it, and amongst the branches of two large poinciana trees which droop right over the roof."

As might be expected, the eggs of the Queensland Bower Bird possess the remarkable characteristics of those of the Spotted Bower Bird. During the season 1895, Mr. Charles French (through his worthy father, Mr. Charles French, F.L.S.) experienced a windfall which gave collectors a pleasant surprise, two pairs of handsome eggs, collected during August in the vicinity of the Gregory River, reaching Mr. French's collection. With thoughtful kindness, Mr. French at once divided the second pair between his old friend Mr. G. A. Kearland and myself.

Mr. A. J. North, of the Australian Museum, Sydney, happened shortly afterwards to visit Melbourne. He was also surprised to see that the fine eggs had been "over carried"—that is, past Sydney. But he was not to be outdone in the matter of the first description. He had (and I commend him for his astuteness) three out of the four eggs described, and two of them figured in the "Victorian Naturalist," almost before the owners were cognisant of the fact.

In the season of 1896, Mr. E. Cornwall found a nest containing two eggs of the Queensland Bower Bird. The nest, which was placed in a small river "oak" (? *Casuarina*) in a little scrub composed of the same trees, on the bank of Canal Creek, a tributary of the Alice River, very much resembled that of the Butcher Bird (*Cracticus*), but was much less strongly built; in fact, so loosely was it put together that Mr. Cornwall says it fell to pieces when he endeavoured to remove it.

In November, the same season, my friend, Mr. D. Le Souëf, found a nest of this fine Bower Bird in open forest in the Bloomfield River district. The nest was at the height of twelve feet from the ground, near the end of a horizontal eucalyptus branch, and contained one egg. Near the same locality he had the opportunity of examining and photographing a bower which was situated under a low, thick bush. The avenue was about two feet in length, and five inches wide; the parallel walls, which nearly touched each other at the top, were about fourteen inches high by about five inches through their thickest part. There was a fair heap of bleached bones at either entrance.

166.—*CILAMYDERA CERVIVENTRIS*, Gould.—(281)

FAWN-BREASTED BOWER BIRD.

Figure.—Gould; Birds of Australia, fol., supp., pl. 36.

Reference.—Cat. Birds Brit. Mus., vi., p. 393.

Previous Descriptions of Eggs.—North: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1160 (1886), also Austr. Mus. Cat., pl. 11, fig. 4 (1889).

Geographical Distribution.—North Queensland; also New Guinea.

Nest.—Open, cup-shaped; composed of twigs, pieces of bark and moss, and lined with grass, &c.; usually built near the ground (North).

Eggs.—Clutch, most probably two; very like that of *C. maculata* in colour, with the same peculiar linear markings crossing and recrossing each other all round; but confined more to the larger end of the egg than is usually the case in *C. maculata*. A specimen of this egg in the Australian Museum collection, taken at Cape York, measures 1·4 inch in length by 1·03 inch in breadth (North).

Observations.—As recorded by Gould, the discovery of this species is due to John Macgillivray, who procured a specimen at Cape York, which, with its curious bower, was transmitted to the British Museum. A very fine bower of these birds may be seen in the "group" collection at the Australian Museum, Sydney.

The Fawn-breasted Bower Bird is also found on the adjacent coast of New Guinea, as well as on some of the intermediate islands in Torres Strait, and may be recognised by the absence of the rose-pink frill on the back of the neck, as worn by the males of the other members of this interesting genus. Mr. Macgillivray hinted that this bird was a mocking-bird.

The bower above mentioned has its walls, which are very thick, nearly upright, or but little inclining to each other at the top, so that the passage through is very narrow. It is formed of fine twigs, is placed on a very thick platform of thicker twigs, and is nearly four feet in length by about the same in breadth, and eighteen inches high. Mr. Macgillivray found the bower situated near the border of a scrub, which was not more than ten feet high, growing on smooth sandy soil without grass. There were some fresh berries and small land shells lying about the bower.

167.—TECTONORNIS DENTIROSTRIS, Ramsay.

TOOTH-BILLED BOWER BIRD.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. i., pl. 43.

Reference.—Cat. Birds Brit. Mus., vi., p. 394.

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—So far as is known the Tooth-billed Bower Bird is restricted to the scrubs of Northern Queensland. Mr. Kendall Broadbent writes:—"This interesting species has been obtained by me on the Tully River, twenty-four miles from Cardwell, at Cairns, at Herbert Gorge, and on Sea View Range, as far above the level of the sea as the scrubs extend, but always in the mountains, stray individuals only descending below 2,000 feet.

"It excels all other Bower Birds as a mimic, and may be fitly termed the master mocking bird of Australia. Not only will it imitate the note of every bird in its neighbourhood, but so closely does it do so, that they are drawn to it as to one of their own kind. This is especially the case during the breeding season, and in May I have remained at one spot in the Herberton scrubs by the half-hour, listening with wonder to its changeful utterances. Its bower, or dancing-ground, is of a unique description; a small portion of the ground of the scrub being rendered perfectly bare for the space of a square yard or so, save the presence of seven to nine large leaves, which the bird has placed therein, and with which it plays. These leaves, which are those of a particular kind of tree, it renews every morning."

Mr. Broadbent has kindly given me an original sketch showing the locality and one of these circular play-grounds found by him in the Cardwell ranges.

Mr. Le Souëf tells me that during his peregrinations in the Bloomfield River district he came across about a dozen play-grounds of the Tooth-billed Cat Bird. They were found in the dense scrub of the higher country. He was usually attracted to the particular spot by the birds whistling near.

Upon the cleared play-ground are placed about nine oval-shaped moderately-sized (about three inches long) leaves, a few inches apart. Mr. Le Souëf agrees with Mr. Broadbent that the leaves are from one kind of tree, with the additional information that the leaves are always placed face downwards—perhaps the soft, lighter-coloured appearance of the underside of the leaf is more pleasing to the birds.

Mr. Le Souëf took a photograph of one of these play-grounds, but the difficulties of the dense shade mitigate against its complete success.

Oologists are on the tip-toe of expectation for the discovery of the nest and eggs of this interesting scrub-dweller, also for further information respecting the nidification of its cousin of more "architectonic wisdom"—the richly-coloured Golden Bower Bird (*Prionodura newtoniana*).

168.—*SERICULUS MELINUS*, Swainson.—(282)

REGENT BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 12.

Reference.—Cat. Birds Brit. Mus., vi., p. 395.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1138, pl. 19 (1886); North: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1160 (1886); Campbell: Proc. Roy. Soc., Victoria, vol. v., new ser., p. 123 (1893), also Proc. Roy. Phys. Soc., Edin., vol. xiv., p. 37 (1898)

Geographical Distribution.—South Queensland and New South Wales.

Nest.—Flat, slightly concave; loosely constructed of coarse twigs or dead branchlets, lined on top with fine brownish twigs and long yellowish



NEST OF THE REGENT BIRD.
(NATURAL SIZE)

From a Photo by the Author.



HAUNT OF THE REGENT BIRD

From a Photo by the Author

wire-like stems of a climbing plant, the latter being chiefly placed round the side; usually situated in dense scrub, at a height of from twelve to twenty-five feet from the ground. Dimensions over all, 12 inches long by 6 inches broad and 2 inches thick. (See illustration.)

Eggs.—Clutch, two, sometimes three. In a clutch of two—(1) is a beautiful, well-shaped specimen, with texture of shell fine and surface slightly glossy; colour, light yellowish-stone, with a faint greenish tinge, marked with blotches and spots of sienna or olive-brown, but chiefly with remarkable hair-like markings of the same colour, as if a person had painted on the shell fanciful shapes and figures with a fine brush. Intermingled are a few dull greyish streaks. All the markings are fairly distributed, being more abundant round the upper quarter; (2) is similar to the other specimen, but markings are less pronounced and finer in character, with a greater proportion of dull greyish, hair-like streaks. Dimensions in inches: (1) 1.57×1.1 , (2) 1.55×1.07 . (Plate 10.)

A second clutch is similar to the above, but has markings like a network all over, and finer or more hair-like in character. Dimensions in inches: (1) 1.58×1.06 , (2) 1.52×1.04 .

The eggs of the Regent Bird resemble, in a remarkable degree, those of the Spotted Bower Bird (*Chlamydera maculata*), with the slight difference that the ground-colour of the eggs of the former is usually more yellowish in tone.

Observations.—The Regent Bird has a somewhat restricted range, being chiefly confined to the sub-tropical coastal scrubs of the northern portion of New South Wales and Southern Queensland; but its extreme southern limit appears to be Port Jackson in the south, where the bird has been occasionally observed, and the Fitzroy River in the north. With regard to the latter locality, Mr. George Potts, jun., Rockhampton, wrote:—“A few Regent Birds have made their appearance during this month (December, 1885) and the latter end of last.” I have also recorded having received a skin of a young male from Duaringa, near that river.

The Regent Bird, especially the adult male with glorious black and yellow plumage, Gould has well said is one of the finest of Australian birds. The youthful male resembles the female; the second year the bill is yellowish; the third or fourth year the plumage is complete.

In November, 1891, I undertook an excursion to the Richmond River district, New South Wales, with a view of obtaining, amongst other items, the eggs of the Regent Bird. I was all the more anxious to obtain them, because the only descriptions (by Messrs. Ramsay and North) then existing were taken from a single and possibly immature egg which was removed from the oviduct of a bird shot by Mr. James Cockerell, the collector, many years ago.

I found the luxuriant scrubs abounding with Regent Birds, in fact, they were as plentiful there as the Wattle Birds (*Acanthochæra*) about the banksia groves of our southern coast. I experienced no difficulty in procuring a few specimen skins, and all that was necessary was to select a balmy day and recline under a canthium tree, where the birds (males,

in various stages of plumage, and females) came to regale themselves on the bunches of hard yellow berries. But although well aided by a hardy companion—Mr. W. T. Bailey—I prosecuted a vigorous and toilsome search through dense labyrinths of humid scrub and thorny brakes of prodigal growth, while the thick foliage of the taller trees caused a perpetual twilight underneath, yet I returned without the eggs. It was an experience akin to seeking for the proverbial needle in a haystack. The picture, "The Haunt of the Regent and Rifle Birds," may convey some idea of the thickness of the scrub, with its bulwarks of spine-covered "lawyer" vines.

From evidence gained by dissection and otherwise, it appeared that November was too early for the majority of these birds. Just prior to quitting the district (19th November) we detected a female Regent Bird carrying a twig, and after much laborious work we succeeded in tracking her through an entanglement of wild raspberries and stinging trees, and were satisfied that she was building in a certain bushy buoyong (*Tarrietia*) tree, after seeing her return several times, each time with a twig in her bill. Marking the tree, we pointed it out to two young farmers, requesting them to send the eggs after us. Some weeks subsequently I received a doleful letter stating they were unable to climb the tree. However, the next month (the last week of December) another farmer, Mr. Robert Newberry, whose scrub paddock I had scoured, following up my instructions, found therein a Regent's nest containing a pair of fresh eggs, which I had the pleasure of describing before the Royal Society of Victoria on the 8th September, 1892. The nest was placed in the scrub, about fifteen feet from the ground, and was observed by the bird sitting thereon. The structure was of such a loose nature—merely a few twigs, &c., forming a flat shelf—that it fell to pieces on removal from the tree.

One evening we discovered a bower on the ground, underneath thick scrub, and a male bird gaily tripping through. It was perfect, but not so large as those usually built by other bower-building birds, being only seven or eight inches high, with walls seven inches broad at the base, and an average width inside of $3\frac{1}{2}$ inches. After much difficulty a photograph was taken of the interesting structure. (See illustration.)

The following are the dimensions of another bower subsequently observed by my son near the same locality. It was situated on a trodden-down bed of short sticks, within a wreath or circle about four feet in diameter, of lawyer palm plants (*Calamus australis*). Bed of sticks about one inch in thickness varied in breadth from nineteen to twenty-two inches. Walls at base seven and three-quarter inches broad by six inches high, tapering to a point. Width of avenue (between walls) four inches. One wall in thickest part two inches, in the other two and seven-eighths inches. Archie's own observations concerning birds he saw performing in this bower are:—"When first seen there were three birds playing in the bower; two were what we took to be males—but they were immature—and the other was a female. The antics they went through were extraordinary, and they were not in the least disturbed by our presence. One would go into the centre of the bower and, picking up a shell, of which there were three, would dance, half opening its wings and then tossing



PLAYGROUND OF THE REGENT BIRD

From a Photo by the Author

the shell in the air or over its head would run out. While this was going on the other two birds outside were scraping or sweeping the ground with their wings, and when the shell fell, one would pick it up and enter the bower to go through the same performance as the first bird, and so on. There were four or five fresh young leaves in the bower at the time, and on visiting the locality the following afternoon, these were seen to be thrown out and four fresh ones placed in their stead."

Regent Birds being frugivorous, are very destructive to the fruit crops of the selectors, and, like many other fruit-eating birds, are very partial to the black, juicy berries of the ink weed (*Phytolacca*), an introduced plant, which flourishes breast high in nearly every clearing throughout the district.

On questioning the aborigines (Richmond River tribe) about the Regent Bird, they called it "Yelgun," which means the sun, and has reference no doubt to the bird's splendid yellow plumage.

A second pair of Regent Bird's eggs found by another farmer fell to my collection. They were taken from a nest situated in a buoyong sapling about twelve feet high, in scrub.—Date, 30th November, 1896. I was fortunate in this instance in having the nest likewise forwarded to me.

It often happens that when once a rare bird's nest and eggs have been discovered, many such nests are afterwards found. Mr. Henry R. Elvery, Alstonville, Richmond River, has kindly sent me original notes of three Regents' nests he found during the season 1896-97.

Mr. Elvery says:—"At the beginning of November, 1896, I was looking for nests on the edge of a standing scrub, when I noticed a bird fly into a prickly tree. On approaching I saw that the bird was building, the nest being nearly complete. I took up a convenient position and watched the bird fly to and from the tree several times, and did not leave until I was convinced the bird was a female Regent (*Sericulus melinus*). The tree in which the nest was built was small but very thorny, and I could see there would be difficulty in getting the nest.

"When I thought the nest might contain eggs, I climbed up a larger tree near, to the height of a few feet above the nest, which I could not plainly see for the mass of intervening prickly branches, but I managed to ascertain it contained at least one egg.

"Two days later, on the 16th November, I visited the place at dusk, having with me a tomahawk, a pruning knife, and a pair of climbing irons, such as are used for climbing telegraph poles. As I approached the tree, the bird flew from the nest, therefore I knew that the full clutch had been laid. The nest was about twenty-five feet from the ground, and on the tree in which it was placed was growing a bunch of lawyer vines (*Calamus*). I climbed the first distance up a pole, which I placed against the tree, cutting my way up through the thorns as I went, and thus reached the head of the tree. The nest was an open structure of dry twigs, and I could now plainly see the eggs through the bottom of the nest. I then cut away the intervening branches before I could get my hand through to the nest, which contained three eggs. Placing the eggs in my hat, which I carried in my mouth, I reached the ground safely."

On the 19th December Mr. Elvery found another nest containing two eggs nearly fresh. This nest was built in the head of a bush, round which was growing a mass of "lawyer" vines, and was about twelve feet from the ground. On the 13th January following, he found a third Regent's nest containing a pair of eggs. Nest and eggs, together with the hen bird, which Mr. Elvery shot, were presented to the Australian Museum, Sydney.

Breeding months November, December, and January.

169.—PRIONODURA NEWTONIANA, De Vis.

GOLDEN BOWER BIRD.

Figure.—Sharpe: Birds of Paradise, part i., pl. 7.

Reference.—De Vis: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 582

Previous Description of Eggs.—De Vis: Report Scientific Expedition to Bellenden-Ker Range, p. 87 (1889).

Geographical Distribution.—North Queensland.

Nest.—Cup-shaped, and loosely constructed of fibrous roots, lined with finer material of the same kind, and decorated with a little green moss on the outside (De Vis).

Eggs.—Clutch (?); pale yellowish-grey, profusely freckled and blotched with pale brown. Dimensions: 27 mm. (1.06 inch) by 19 mm. (.74 inch) (De Vis).*

Observations.—This, the last-discovered species, and one of the most beautiful of bower-building birds, vying in its golden splendour the Regent Bird, shares the shades of the northern scrubs of Queensland with its curious cousin, the Tooth-billed Bower Bird (*Tectonornis denti-rostris*).

I cannot do better than give the discoverer's (Mr. K. Broadbent) own interesting remarks of this rare and beautiful species, as read before the Natural History Society of Queensland:—

"Newton's Bower Bird (*Prionodura newtoniana*).—This bird was first obtained by me in September, 1882, in the Tully River scrubs, though I only secured then an immature specimen, coloured uniformly olive-brown upon the upper surface. This—the type—Mr. De Vis described.

"Whilst pursuing my official duties at Herberton in the months of March to May, 1889, I met with several examples of a bird that I at once detected to be Newton's Bower Bird, and amongst them some gaily-coloured, full-plumaged cocks, which, instead of exhibiting the sombre hues of youth, are largely bright yellow-coloured, they being, as it is

* Although I have given Mr. De Vis's description of the nest and egg, which appear to be taken from specimens furnished by Mr. Archibald Meston, I have no doubt in my own mind they are referable to some other bird—possibly the Fly-Robin (*Hechromyias*), and not to the Golden Bower Bird.

said 'one of the three handsomest birds in Australia.' This rediscovery on my part was announced in an official communication, dated from Herberton, 30th March, 1889.

"At the commencement of February of the same year, Mr. A. Meston, during his first exploration of Mount Bellenden-Ker, procured a single specimen of a very handsome bird, which, at its receipt at the Museum on the 25th March, was pronounced to be a new bird, and, as such, received the name of Meston's Bower Bird (*Corymbicola mestoni*); my discovery that it was only the full-plumaged male of Newton's Bower Bird (*Prionodura newtoniana*), and the specimens and written observations which I forwarded in support of this conclusion, not having been then received in Brisbane.

"These observations, as some others due to Mr. Meston, are to be found in a paper entitled, 'A Further Account of *Prionodura newtoniana*,' by C. W. de Vis, contained in the sixth volume of the 'Proceedings' of our Royal Society, and may be fittingly quoted on this occasion:— '*Prionodura* is emphatically a Bower Bird. Both its observers in nature met with its bowers repeatedly, and agree in representing them to be of unusual size and structure. From their notes and sketches it would appear that the bower is usually built on the ground, between two trees, or between a tree and a bush. It is constructed of small sticks and twigs. These are piled up almost horizontally round one of the trees in the form of a pyramid, which rises to a height varying from four feet to six feet. A similar pile of inferior height—about eighteen inches—is then built around the foot of the other tree. The intervening space is arched over with stems of climbing plants, the piles are decorated with white moss, and the arch with similar moss, mingled with clusters of green fruit resembling wild grapes. Through and over the covered run play the birds, young and old, of both sexes. A still more interesting and characteristic feature in the play-ground of this bird remains. The completion of the massive bower so laboriously obtained is not sufficient to arrest the architectural impulse. Scattered immediately around is a number of dwarf, hut-like structures—gunyahs they are called by Broadbent, who says he found five of them in a space of ten feet diameter, and observes that they give the spot exactly the appearance of a miniature blacks' camp. These seem to be built by bending towards each other strong stems of standing grass, and capping them with a horizontal thatch of light twigs. In and around the gunyahs, and from one to another, the birds in their play pursue each other to their hearts' content.'"

Mr. Broadbent mentions that the male Golden Bower Bird is a splendid mocker, imitating all the birds of his locality, as well as the croaking noise of tree-frogs. The note of the female resembles that of the Queensland Cat Bird (*Elurcedus*) in a sharper and shriller key.

Mr. Broadbent has thoughtfully sent me his original sketches of various playing-places of the Golden Bower Bird (*Prionodura newtoniana*), which he made when he accompanied Mr. Meston's scientific expedition to Bellenden-Ker, in 1889, and when additional specimens of the beautiful birds themselves were obtained.

Sketch 1.—Bower made of small sticks, decorated with long white

moss and little bunches of wild fruit resembling grapes. Locality, seven miles from Herberton. Found, April. This illustration shows the base of two small trees, heaped about with a larger pyramid of fine sticks (the trees having the appearance of growing out of the heap), with a smaller semi-detached heap on the right-hand side.

Sketch 2.—Bower eight feet high, decorated with long white moss off pine trees, and wild grapes. Locality, Herberton scrub, 20th May. In this instance the sticks are piled in pyramid form around a single small tree or sapling for about two-thirds of its height, with a smaller heap about one and a-half feet high on the left side.

Sketch 3.—Bower seen Herberton scrub, 14th May. This is exceedingly interesting, and represents a double pile of small sticks—one four and a-half feet high around the stem of two thin sapling trees, the other one and a-half feet high to the right around the base of a large tree.

Sketch 4.—This sketch merely shows a large tree with its spur or root on the right, ornamented with portions of small sticks. Herberton scrub, May.

Sketch 5.—Depicts a play-ground with two miniature "humpy"-like structures, built with growing ferns, roofed over with small twigs. Five or six of these little arbour-like places, which are about ten inches high, belong to one play-ground. Herberton scrub, May.

A splendid series of these magnificent birds may be seen in the Australian Museum, Sydney.

SUB-FAMILY—TIMELIIDÆ: BABBLERS, &C. (In various groups).

170.—STIPITURUS MALACHURUS, Shaw.—(201)

EMU WREN.

Figure. Gould: Birds of Australia, fol., vol. iii., pl. 31.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 100.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 177 (1863) *id.*; Gould: Birds of Australia, Handbook, vol. i., p. 341 (1865).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South and West Australia, and Tasmania.

Nest.—Oval in form (but that part which might be termed the true nest is perfectly round, placed on its side; the mouth very large (comparatively), taking up the whole of the upper part of the front. It is very shallow, so much so that if tilted slightly the eggs would roll out, they being almost upon a level with its edge. It is outwardly composed of grass and the young dry shoots of reeds; lined with fine grass, roots, and finally a very fine green moss. Very loosely put together, and requires to be moved very gently to prevent it from falling to pieces (Ramsay). Another example is oval, broadest at the base, with side entrance near the top; well built of grass, lycopodium, &c., with a few

spiders' cocoons on the outside; inside lined with fine grass, &c.; usual situation, about a foot from the ground, in thick, short scrub. Dimensions: length, $4\frac{1}{2}$ inches; breadth, 3 inches; entrance, 1 inch across.

Eggs.—Clutch, three, occasionally four; lengthened-oval in form; texture very fine; surface glossy; colour, pearly-white, spotted all over (like those of the Blue Wren, *Malurus cyaneus*, only redder), but sometimes with a large patch on the apex, and very few markings elsewhere, of rich reddish-chestnut. Eggs large compared with the size of the bird. Dimensions in inches of two pairs: A (1) $\cdot7 \times \cdot49$, (2) $\cdot67 \times \cdot48$; B (1) $\cdot67 \times \cdot54$, (2) $\cdot66 \times \cdot49$. (Plate 10.)

Observations.—This remarkable little bird enjoys a somewhat extensive habitat, seeing it is found in favoured localities from Southern Queensland round to South-west Australia.

The Emu Wren is by no means a scarce bird, but as it frequents dense grass beds and rushes of low swampy districts, its nest is rarely discovered. I have looked for it in vain in places where I have observed the birds. When out with a party of field naturalists on 9th November, 1884, we came across young which apparently had just left the nest.

Gould found a nest containing three newly-hatched young in the neighbourhood of Recherche Bay, Tasmania. The nest, which he described as a small ball-shaped structure with rather a large opening on one side, was composed of grasses, lined with feathers, and artfully concealed in a tuft of grass.

Dr. Ramsay gives an interesting account of the finding of his first nest. He says:—"I had for many days visited the swamps upon Long Island, where these birds are very plentiful, in hopes of finding them breeding, but it was not until the 25th September, 1861, that I succeeded in discovering a nest, although I had watched them for hours together for several days. While walking along the edge of the swamp, however, this day, I was agreeably surprised by disturbing a female, which flew from my feet out of an overhanging tuft of grass growing only a few yards from the water's edge. Upon lifting up the leaves of the grass, which had been bent down by the wind, I found its nest carefully concealed near the roots, and containing three eggs. As the bird did not fly far, but remained close by in a small swamp-oak (*Casuarina*), I had a good opportunity of satisfying myself that it was the veritable Emu Wren. The eggs were, of course, quite warm, and within a few days of being hatched; this may account for the bird being so unwilling to leave the spot; for when I returned about five minutes afterwards the female was perched upon the same tuft of grass, and within a few inches from where I had taken the nest."

Mr. G. E. Shepherd, Somerville, read some very interesting remarks on the "Nidification of the Emu Wren" before the Field Naturalists' Club of Victoria, 14th December, 1897. He stated:—"In the first place I may say that the birds are far from rare, though the eggs are exceedingly so—a fact, no doubt, due to the extreme difficulty experienced in finding the nest. In October, 1892, I found my first nest in the following curious

manner. I had noticed a White Egret flying along the edge of the tide on the shore of Western Port Bay, and being anxious to secure the bird, I commenced stalking through the scrub fringing the fore-shore. Whilst so engaged I flushed an Emu Wren from a thick salonica bush, and discovered the nest, situated in the thickest part of the foliage, and containing three eggs, which were nearly hatched. Possessed of the knowledge thus obtained, I made repeated and persistent efforts to again find a nest, but without success until September, 1895, on the 14th of which month I succeeded in finding a nest containing two fresh eggs. This nest I also found accidentally through riding across a shallow swamp fringed with stunted tea-tree, from amongst which I saw the bird flitter, and after a short search discovered the nest. Two days afterwards I discovered another nest in a patch of thick, low scrub. In this instance three eggs were taken, somewhat incubated, one of which broke when being blown.

"Owing to the absence of bush fires last summer the birds were more numerous this spring than for some years, hence I devoted all my spare time during the latter part of September and the whole of October to searching for their nests. On the 26th September I found a nest in which were three eggs slightly incubated. The nest was placed at a height of eighteen inches from the ground among low dense scrub in a swampy locality. On the same date I also discovered the nest exhibited to-night, which the birds deserted, probably owing to my disturbing their nesting operations, as I saw the female within a few feet of the nest. This nest I have brought with as much surroundings as possible, and it will, I think, enable all interested to get a fairly good idea of the situations favoured by these birds for nesting. In this instance a space of two feet separated the nest from the ground, and in every instance coming under my notice the nests are situated among scrub, thick, low, and dense, and matted together with the wiry creeper as in the case of the nest exhibited. I subsequently found one nest and three fresh eggs; also, two nests, containing three and four eggs respectively, both the latter sets being nearly hatched; besides two others containing young birds.

"As all the nests were a considerable distance from my home, I had no opportunity of watching them for more than a brief period, which, however, enabled me to observe the female return to the nest on two occasions, and take her place upon the eggs. This she apparently does by 'backing' into the nest, hence her long tail sticks outward through the entrance and over her head, a conclusion forced upon me (even without the necessity of eye-witnessing) from the extreme length of the tail and size and shape of the nest. The eggs are somewhat large for the bird, and, like many other species, differ considerably in their markings. Nearly all those taken by me may be likened to the eggs of *Malurus cyaneus*, but somewhat smaller. The nest is much more compact than the Blue Wren's, smaller, and much better finished, besides being more artfully concealed. As Gould has truly remarked, the bird's powers of flight are but feeble; hence it depends mainly upon its wonderful activity upon the ground as a means of escape from danger, and the dense undergrowth found in the localities it frequents."



EMU WREN'S NEST

From a Photo by the Author.

I have used Dr. Ramsay's description of the nest, and also have given the description of a typical nest which was kindly presented to me by Mr. Shepherd. The Western Port example is decidedly compact and well-built, and most resembles that of a Tit (*Acanthiza*). I have every confidence in Mr. Shepherd's identification. I have since been in the field with him, when he showed me similar nests built by Emu Wrens, one of which, by the way, contained an egg of the Narrow-billed Bronze Cuckoo.

Breeding months September and probably to the end of the year.

The illustration of the "Emu Wren's Nest" is taken from one situated near a bit of leptospermum scrub.

171.—STIPITURUS RUFICEPS, Campbell.

RUFOUS-CROWNED EMU WREN.

Figure.—Ibis, pl. 7 (1899).

Reference.—Victorian Naturalist, vol. xv., p. 116 (1899).

Geographical Distribution.—West and North-west Australia.

Nest and Eggs.—Undescribed.

Observations.—On the 14th April, 1898, close to the beach near the North-west Cape, Mr. Tom Carter shot, in company with White-backed Wrens (*Malurus leuconotus*), a pair of Emu Wrens. Believing them to be the ordinary kind, he sent the male together with some other skins to his father in England. However, he retained the female, which he kindly forwarded to me, at my request. I at once perceived that it differed from the species found in the scrubs of Victoria, and provisionally (until an opportunity occurred of examining the male) named the new bird as above.*

Luckily Mr. Carter procured another male on the 8th December (1898), which fully confirms the new species, and is one of the smallest of Australian birds.

It differs from the ordinary Emu Wren in its smaller size and richer colouring of blue upon the throat (of the male); the crown of the head is rufous-brown, and the curious tail feathers are not so filamentary or loose in structure.

Comparative dimensions in inches of the adult male of both species:—
S. malachurus.—Length, 7·5; wing, 1·6; tail, 4·75; bill, ·35; tarsus, ·82
S. ruficeps.— " 5·0; " 1·43; " 2·9; " ·3; " ·6

I have no doubt that the small birds, described as Emu Wrens, found and lost by the members of the Calvert Exploring Expedition in the North-west Desert, 1896, were the same species as those procured by Mr. Carter, especially as Mr. Keartland mentions the noticeable feature of the peculiar tail feathers being more *close in texture* than any Emu

* Victorian Naturalist, vol. xv., p. 116 (1899).

Wrens he had previously seen. I quote from Mr. Keartland's field notes:—* "When approaching Separation Well we were surprised to find a species of small bird hiding in the spinifex. Numbers were seen, but, owing to their agility in concealing themselves, and their disinclination to fly, it was difficult work to secure them. The first one obtained was caught by Messrs. L. A. Wells and G. L. Jones, by simply throwing a waterproof sheet over the tussock in which it secreted itself, and then removing the grass by degrees until the bird was caught. It proved to be an immature female. At the Well I succeeded in obtaining three more (two males and one female). The males were exceedingly brilliant in colour, the throat being of a very bright lavender-blue. These were all shot in a low acacia bush on a sand-hill. Three of their nests were found in the spinifex, but the young ones had all taken flight. These nests closely resembled those of the *Maluri*, but had rather large side openings."

172.—SPHENURA BRACHYPTERA, Latham.—(202)

BRISTLE BIRD.

Figure.—Gould: Birds of Australia, fol. vol. iii., pl. 32.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 104.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N. S. Wales, vol. vii., p. 50, pl. 3, fig. 13 (1882); North: Austr. Mus. Cat., pl. 8, fig. 16 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria and South Australia (?).

Nest.—Oval, dome-shaped structure; composed of grasses and débris; situated in thick grass, ferns, &c., near a creek.

Eggs.—Clutch, two to three; oval in form, with somewhat broad apex; texture of shell fine; surface glossy; colour, warm, or pinkish-white, richly spotted with reddish and purplish-brown, so thickly on the apex as to form a dark patch. In one example of a pair the dark patch is brownish, the other being more purplish. Dimensions in inches: (1) 1.1 × .8, (2) 1.08 × .78.

Observations.—The scarce and curious Bristle Bird inhabits reed beds and such like localities suitable to its habits in Eastern Australia. Little is known of its breeding habits, by reason of the bird's secure retreat—dense herbage bordering creeks, &c. The first discovered nest and eggs were described by Dr. Ramsay from Mr. Ralph Hargreave's collection. Those I have described were collected by Mr. S. W. Jackson in the Clarence River district, during February.

Breeding months September to February.

* Proc. Roy. Soc., S.A., vol. xxii., p. 176 (1898).

173.—*SPHENURA LONGIROSTRIS*, Gould.—(203)

LONG-BILLED BRISTLE BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 33.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 105.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 344 (1865); Ramsay; Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1143 (1886); North: Austr. Mus. Cat., p. 126, pl. 8, fig. 15 (1889).

Geographical Distribution.—West Australia.

Nest.—Formed of dry, wiry grass, without any lining; more globular than those of the *Maluri*, but, like them, with an opening in the side; it is rather a large size, and built in a clump of coarse grass, sheltered by an overhanging dead bush (Gilbert). Dimensions: 6 inches in length, 5 inches in width, and 4 inches in height (North).

Eggs.—Clutch, two, and possibly more; colour, dull-white, minutely dotted, spotted and freckled all over with wood-brown and purplish-brown markings, particularly towards the larger end, where, intermingled with clouded blotches of dark-lilac, they become confluent and form an irregular zone. Dimensions in inches: (1) $\cdot 91 \times \cdot 73$, (2) $\cdot 9 \times \cdot 72$ (North).

Observations.—The Long-billed Bristle Bird is the western but smaller type of the preceding species.

A nest of the Long-billed Bristle Bird in the Australian Museum, according to the Catalogue of that institution, was taken by Mr. George Masters, at King George's Sound (West Australia), in September, 1868, and is described as oval in form, with a large entrance at the side, and is composed entirely of long, dried, hollow grass stalks, with a little grass of a finer description placed inside at the bottom of the nest. The nest contained two eggs, and was found amongst some dried vegetation close to the ground.

174.—*SPHENURA BROADBENTI*, McCoy.

RUFIOUS BRISTLE BIRD.

Figure.—Gould: Birds of Australia, fol., supp., pl. 25.

Reference.—Cat. Birds Brit. Mus., vol. vii. p. 106.

Previous Description of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. xxii., p. 58 (1897).

Geographical Distribution.—Victoria and South Australia (?).

Nest.—Oval-shaped, with side entrance; somewhat loosely constructed; composed externally of dried plant stems, wiry fibrous roots, and dried

grasses; inside lined almost exclusively with rootlets (North). Usually situated in thick scrub near the ground.

Eggs.—Clutch, two; slightly swollen oval in form; shell very thin; dull purplish-white ground-colour, one specimen having numerous freckles and spots of purplish-brown evenly distributed over the surface of the shell, and the larger end slightly tinged with slaty-grey; the other is similar in colour, but is more finely and thickly marked, and has a darker cap of confluent markings on the larger end. Dimensions in inches: (1) 1.09 × .85, (2) 1.07 × .84 (North).

Observations.—The Rufous Bristle Bird is a local species, being restricted, as far as is yet known, to the dense forest scrubs between the districts of Cape Otway and Portland Bay, Victoria.

The original specimen of this Bristle Bird was shot by Mr. Kendall Broadbent, December, 1858, in a thick scrub, twenty-four miles from Portland Bay, and presented by him to the National Museum, Melbourne. The director of that institution, the late Professor (afterwards Sir Frederick) McCoy, returned the compliment by naming the new and interesting species after its discoverer.

Mr. J. F. Mulder, Geelong, while scrub cutting in a gully at Bamba, near Lorne, on the 25th November, 1893, found a nest of this bird containing young scarcely feathered.

Mr. H. E. Hill, when camped near Lorne during one Christmastide, procured a pair of birds, but was not fortunate in finding the nest. The notes of the bird are described as resembling the noise produced by the grating of a cart-wheel on an ungreased axle. Mr. Hill states:—"When we first reached the St. George Valley, where we fixed our camp, we noticed the great number of 'cart-wheel' birds that were calling on all sides. The whole time we were out they seemed very plentiful, and whereas on previous trips we had never been able to even get a sight of the bird, on this trip we not only saw a number, but were fortunate enough to secure two—a male and a female—both in fine condition. It turns out to be the Rufous Bristle Bird (*Sphenura broadbenti*, McCoy). We found afterwards that fires had been through a great many of the gullies about the ranges during the previous twelve months, and that the undergrowth had been in many cases completely destroyed, so that the great abundance of the birds may have been only apparent, the birds really having been driven nearer the coast by the destruction of their usual haunts."

However, one of Mr. A. J. North's correspondents was fortunate in discovering two nests in the thick undergrowth of gullies in the Cape Otway forest. The nests were found during the month of November, each containing two fresh eggs.

175.—*AMYTIS TEXTILIS*, Quoy and Gaimard.—(198)

GRASS WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 28.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 107.

Previous Description of Eggs.—North: Rep. Horn Scientific Exp., p. 81 (1896).

Geographical Distribution.—New South Wales, Victoria, South and West Australia.

Nest.—Circular, with entrance in the side; rather loosely constructed of dried grasses. Usually placed at the foot of cane grass on banks of creeks or close to tussocks of grass (Keartland).

Eggs.—Clutch, two to three; round oval in form; texture of shell fine; surface glossy; colour, pinkish-white, spotted boldly all over, but particularly on the apex, with pinkish-red and purple. Usually darker in colour than those of *A. striata*. Dimensions in inches of proper clutches: A (1) $\cdot 79 \times \cdot 58$, (2) $\cdot 77 \times \cdot 59$; B (1) $\cdot 77 \times \cdot 6$, (2) $\cdot 76 \times \cdot 6$ (Plate 10.)

Observations.—This somewhat obscure interior species would appear to inhabit country similar to that where the Striated Grass Wren is found, but whose habitat stretches across to Western Australia. Gould, who records having met the Textile Grass Wren on the Lower Namoi, New South Wales, was very much impressed with the bird's curious locomotion and its "exceedingly droll appearance" when seen hopping over the ground.

Indirectly, through the Horn Expedition to Central Australia, the eggs became known to science, and are now rare items in one or two collections. The following year, eggs of the Textile Grass Wren were forwarded to Mr. G. A. Keartland, who accompanied the expedition as ornithologist, by Mr. C. E. Cowle, who found a nest during February, 1895, and who forwarded a skin of the female shot at the nest.

In the Horn Expedition "Report," Mr. Keartland writes:—"Just as *A. striata* is confined to the porcupine grass, so *A. textilis* is limited to the rocky gorges and sides of the ranges, where they appear in companies of six or seven in number, hopping or running like mice, with tail erect."

Again, Mr. Keartland, with a subsequent exploring expedition (Calvert's), concerning this truly desert species, states:—"Amongst the salt-bush near Lake Way, and also on the samphire flats or scrub-covered sand-hills near our camel depot on Brockman Creek, I obtained over a dozen specimens of this bird, and in August secured a pair of young ones unable to fly. I found no variation in colour or structure in either sex or stage, adult or young. They all possessed the same stout bill and fleshy thighs. The sexes could not be distinguished without dissection. These birds keep close to the ground under some dense bush until disturbed, when they fly or run with great rapidity to the nearest shelter.

Occasionally at mating-time they may be seen on a low bush, but seldom more than two feet from the ground. Wounded, it is almost impossible to secure them, as they run to shelter and hide like mice."

176.—*AMYTIS STRIATA*, Gould.—(199)

STRIATED GRASS WREN.

Figure.—Gould: *Birds of Australia*, fol., vol. iii., pl. 29.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 107.

Previous Descriptions of Eggs.—Ramsay; Proc. Linn Soc., N.S. Wales, vol. i., 2nd ser., p. 1143 (1886); North: Austn. Mus. Cat., pl. 9, fig. 10 (1889).

Geographical Distribution.—New South Wales, Victoria, and South Australia.

Nest.—Almost open (so much so that when viewed from above the contents may be seen), with side entrance near the top; composed of old or dead grass, in some localities mixed with shreds of bark. Usually placed on the top of spinifex grass. Dimensions, according to Dr. E. P. Ramsay: diameter, $4\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; inside $2\frac{1}{2}$ inches across by $\frac{3}{4}$ inch deep.

Eggs.—Clutch, two to three; nearly true oval in shape; texture very fine; surface glossy; colour, whitish or warm-white, finely freckled, more particularly in the form of a belt round the upper quarter, with light-umber or reddish-brown and light-purple. Comparatively large compared with the size of the bird. Dimensions in inches of a proper pair: (1) $\cdot 84 \times \cdot 6$, (2) $\cdot 83 \times \cdot 6$.

Observations.—Of the Amytes, or Grass Wrens, I never recollect seeing any in a state of nature. They are all of terrestrial habits. The Striated Grass Wren is a frequenter of the scrub and undergrowth of the interior, chiefly of New South Wales, Victoria, and South Australia.

Gould hazarded the opinion that the bird built a dome-shaped nest and laid four spotted eggs. How far he was correct may be judged by the descriptions given above.

Specimens of both nest and eggs in the Australian Museum, Sydney, were collected by the late Mr. K. H. Bennett, from a tussock of porcupine grass at Mossiel, 1883, where this species was noticed breeding during September and October.

Mr. Keartland informs me that he was aware of eleven nests containing eggs found in Central Australia. In every case they were situated on the top of a tussock of porcupine or spinifex grass.

During the progress of the Calvert Expedition, in August (1896), Messrs. L. A. Wells and G. L. Jones found several nests containing eggs belonging to this species, and subsequently a number of others were obtained. The nests were always placed on top of a spinifex tussock, and built of soft grass, with a large opening near the top. The eggs were usually a pair.

177.—*AMYTIS MACRURA*, Gould.—(200)

LARGE-TAILED GRASS WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 30.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 108.

Geographical Distribution.—West Australia.

Nest and Eggs.—Undescribed.

Observations.—Mr. G. A. Keartland has eggs in his collection from Central Australia which he believes are referable to this species. They are similar to those of *A. textilis*, but more spotted like those of the *Cinclorhamphus rufescens* (Rufous Song Lark), with bright reddish-brown. Dimensions: .75 × .59 inches.

Gould states that the Large-tailed Grass Wren "is evidently the representative of *A. textilis* of the eastern coast, to which it is very nearly allied, but from which, as well as from *A. striata*, it may at once be distinguished by its more robust form, and by the much greater length and size of its tail."

Gilbert procured two skins for Gould in Western Australia.

178.—*AMYTIS GOYDERI*, Gould.

GOYDER GRASS WREN.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 8.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 109.

Geographical Distribution.—South Australia.

Nest and Eggs.—Undescribed

Observations.—As Gould has remarked, the nearest ally to the Goyder Wren is *A. striata*, the entire throat and chest, however, being whitish or lightly coloured, which is not the case in the other known species of the genus. The Goyder Wren was collected by Mr. F. W. Andrews, one of the members of the Lake Eyre Exploring Expedition, towards the interior of South Australia. The director of the Adelaide Museum had the new bird forwarded to Gould in England to be figured, who dedicated it to Mr. G. W. Goyder, for many years Surveyor-General of South Australia, and who died in 1898.

179.—MEGALURUS GRAMINEUS, Gould.—(245)

GRASS BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 36.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 125.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 401 (1865); North: Ausn. Mus. Cat., p. 146 (1889).

Geographical Distribution.—Australia in general and Tasmania.

Nest.—Round in shape, with small entrance at top; somewhat loosely constructed of dead flags and aquatic plants. Some examples are almost entirely composed of the dark flowering or seeding tops of rushes, so cleverly arranged as to meet over and protect the entrance; inside deep, lined with grass and finally with feathers of wild fowl, one or two of the largest feathers beautifully arching over the opening and hiding the contents. Usually situated in rushes or a bush in a swamp or lagoon, not far above the surface of the water. Dimensions over all, 4 to 5 inches: egg cavity, $1\frac{3}{4}$ inches across by $2\frac{1}{2}$ inches deep.

Eggs.—Clutch, three to four; oval or roundish oval in form; texture of shell very fine; surface slightly glossy; colour, light purplish-pink, somewhat boldly spotted and blotched with purplish-red and dull purplish-grey. Dimensions in inches of a proper clutch: (1) $.73 \times .54$, (2) $.72 \times .53$, (3) $.71 \times .52$. (Plate 10.)

Observations.—The little Grass Bird is well-named, for it may be flushed from the rank tussock grass covert on various islands off the coast. But its two or three melancholy, sustained, whistle-like notes are more frequently heard during breeding season among the sedges, tea-tree in swamps, or in lignum growing in lagoons inland.

The little bird is found in places congenial to its habits from Queensland down southward and across to Western Australia, also in Tasmania.

Although I have observed the little Grass Bird amongst the rough herbage of such places as Breaksea Island, Western Australia, as well as on some of the smaller islands in Bass Strait, there is no evidence of its breeding in such places. But one has to wade through the mazes of murky swamps, sometimes far inland, to find its wonderfully constructed nest and pretty pink-spotted contents.

The first of these trophies I found was years ago in the tea-tree swamp behind Mr. J. Harris's nurseries that were in Yarra Street, near South Yarra railway station. The swamp has long since been reclaimed, the nurseries, too, have disappeared; there only remain to me vivid recollections of perambulating through a quagmire, varied with the finding of red-speckled eggs and the occasional flushing of Snipe. Since then my note book tells me I have taken of the mysterious little Grass Bird:—

19th October, 1880.—Nest with three eggs, in tea-tree swamp, Phillip Island, Victoria.

3rd December, 1886.—Nest with four eggs, three others building in rushes in Caulfield swamp.

6th December, 1888.—Nest with three eggs, in tea-tree swamp, near Heidelberg.

Breeding months August or September to January.

180.—MEGALURUS GALACTOTES, Temminck.—(244)

TAWNY GRASS BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 35.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 127.

Previous Description of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. x., 2nd ser., p. 217 (1895).

Geographical Distribution.—West and North-west Australia, Northern Territory, Queensland, New South Wales, and Victoria (?).

Nest.—Deep, cup-shaped, slightly domed or narrowed at the top; outwardly composed of dried swamp grasses; lined inside with feathers (North).

Eggs.—Clutch, three; precisely similar in colour and markings to those of its congener, *M. gramineus*, but are slightly larger, being of a reddish-white ground-colour, freckled all over with purplish-red markings, which predominate, as usual, on the thicker end of the egg. Dimensions in inches: $\cdot 8 \times \cdot 58$ (North).

Observations.—A few Tawny Grass Birds were observed in the long herbage in the vicinity of our Cardwell camp, Northern Queensland. As Gould observed, the bird rarely takes wing unless closely hunted, its flight appearing difficult or weak, being more like the actions of a young bird or fledgeling.

The first authenticated nest of this scarce species was found at Coomooboolaroo. I give Mr. North's account of the circumstances connected with its finding. He states:—"Although the range of the Tawny Grass Bird extends over the greater portion of Northern and Eastern Queensland and Northern New South Wales, it is of so shy and retiring a disposition that it is a species seldom met with, and only on one occasion have I heard of its nest being found. The late Mr. George Barnard, of Coomooboolaroo, Queensland, shortly before his decease, informed me that while collecting specimens of Micro-lepidoptera on his station, on 26th October, 1893, he flushed one of these birds from the rush-bordered bank of a dry creek, and after a diligent search succeeded in finding its nest at the bottom of a tuft of long rushes. The nest contained three fresh eggs, two of which he unfortunately broke. The remaining egg has recently (1895) been forwarded to me for examination by Mr. Charles Barnard."

Mr. Tom Carter has been good enough to send me a skin of a Tawny Grass Bird from the region of the North-west Cape, with the following memo.: "I think it may be new. It does not correspond with Gould's description, having no dark centres to the feathers on the back, and the abdomen is almost red. It may be a desert variety. I have only seen it in the dense spinifex on dry stony ranges." Comparing the skin with *M. galactotes*, the North-west bird has somewhat abraded plumage, while blackish-brown centres of the upper surface feathers are absent.

181.—*ORIGMA RUBRICATA*, Latham.—(236)

ROCK WARBLER.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 69.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 135.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 445 (1863) *id.*; Gould: Birds of Australia, Handbook, vol. i., p. 387 (1865); North: Austn. Mus. Cat., pl. 13, fig 8 (1889).

Geographical Distribution.—South Queensland and New South Wales.

Nest.—Oblong in form, very large for the size of the bird, with entrance in the side about two inches wide. It is generally composed of fibrous roots interwoven with spiders' webs. The mass does not assume the shape of the nest until a few days before it is completed, when a hole for the entrance is made and the inside warmly lined with feathers (Ramsay). Usually placed in dark caves, hollow logs, or disused coal pits (North).

Eggs.—Clutch, three; oval or long oval in shape; texture of shell fine; surface glossy; colour, pure white. Dimensions in inches of a clutch: (1) $\cdot 86 \times \cdot 62$, (2) $\cdot 86 \times \cdot 61$, (3) $\cdot 85 \times \cdot 59$.

Observations.—The Rock Warbler is altogether a very singular bird, with an equally singular habitat, restricted to the rocky situations of the coast of New South Wales and Southern Queensland, occasionally to stony gullies and ravines more inland, notably at the Blue Mountains and Mudgee.

During a visit to Sydney I was interested in watching the movements of one or two of these birds about the rocks on the Manly beach. My son Archie procured a pair of birds from the same locality.

As far back as 1863, Dr. Ramsay has given a good account of the nest and eggs of the Rock Warbler. Dr. Ramsay observed that the birds took a long time to complete the nest. One found on the 6th August was not finished until the 25th of that month. On the 30th three eggs were taken from it. This nest was suspended to the roof of a cave in the gully of George's River, near Macquarie Fields, and was composed of rootlets and spiders' webs, warmly lined with feathers and opossum fur.

I saw a very clean set of eggs of the Rock Warbler in the collection of Mr. S. W. Moore, Sydney, taken at the Jenolan Caves, 21st September, 1893.

Breeding season lasts from August to December, during which period two broods are reared.

182.—*CISTICOLA EXILIS*, Vigors and Horsfield—(208-212)
C. ruficeps, Gould.

GRASS WARBLER.

Figure.—Gould: Birds of Australia, fol., vol. iii, pls 41-45

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 269.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 328 (1866), also Ibis, p. 277 (1868); Campbell: Southern Science Record (1882), also Nests and Eggs Austr. Birds, pl. i., fig. 212 (1883).

Geographical Distribution.—Whole of Australia and King Island; also New Guinea Islands, Molucca Islands, Philippines, Formosa, Malayan Peninsula, Further India, and India.

Nest.—Small, inclined to oval in shape, with side entrance near top; constructed of fine grass, coarser on the outside, with spiders' webs and cocoons added; warmly lined inside with soft material such as thistle-down. Usually placed near the ground in tussock grass, dock-weed, or other herbage. In some instances the broad leaves of dock enveloping the nest are stitched or sewn together in a remarkable manner with some silky thread-like substance. General situation open, rank, grassy country, river flats, and occasionally in cultivated crops. Dimensions: outside, $2\frac{3}{4}$ to 3 inches in diameter by $3\frac{1}{2}$ to 4 inches long; entrance, $1\frac{1}{4}$ inches across.

A nest of the Rufous-headed Grass Warbler from Northern Queensland was found about six inches above the ground in a small bush, the leaves of which were most ingeniously sewn together round the nest by means of a thread of cob-web. The nest was constructed of fluff from a flat weed when the seeds are ripe.

Eggs.—Clutch, four, occasionally five; round oval in shape; texture of shell very fine; surface exceedingly glossy; colour, beautiful, delicate bluish-green, moderately but boldly blotched, chiefly about the larger end, with reddish-brown and purplish-brown. Dimensions in inches of a proper clutch: (1) $\cdot6 \times \cdot45$, (2) $\cdot6 \times \cdot45$, (3) $\cdot59 \times \cdot44$, (4) $\cdot58 \times \cdot46$. (Plate 10.)

Observations.—A deal of confusion exists about the identity of this little wandering bird. Gould himself entertained doubts about the several varieties which he named, but with the British Museum Catalogue we may safely reduce the number to a unit, and accept it as one and the same species that ranges from Southern Asia down through the intermediate islands to Australia, where it has been observed throughout, to King Island, Bass Strait (being identified there by the Field Naturalists' Expedition, 1887),—its most southerly limit recorded.

Whether the Grass Warbler is migratory or not, numbers appear to

remain during the winter in Victoria. During May one year (1895) I saw many about the rushy flats of the Latrobe River, Gippsland, and my friend, Mr. A. W. Milligan, writing to me the following July, stated the *Cisticolæ* were "still in evidence there."

On the grass flats bordering the Yarra, near Heidelberg, I had two or three field days during September, 1888, especially amongst the Grass Warblers. The little birds proved exceedingly shy, and considerable patience had to be exercised before the bird indicated even the whereabouts of its grass-hidden nest. The following are the rough data regarding the nest-finding.

"No. 1 nest found Heidelberg, 11th October, 1888, in tuft of rushes few feet from water. Entrance eastward. Eggs, four, half incubated. Saw female bird.

"No. 2 found near No. 1, 11th October, 1888, just a few bits of down placed in weed. 23rd, found weeds sewn together and foundation made. Saw Rufous-headed bird carrying down. 30th, four eggs. Shot female. She had striated head.

"No. 3, at Heidelberg. Saw pair birds at well-made nest 17th. Nest appeared completed, but on 23rd found three eggs and bird still carrying material. Shot female 30th; striated head. No more eggs.

"No. 4, near Burke Road, Kew. Nest few feet from water. Completed in a tussock of grass 23rd October. Four eggs 3rd November. (For this nest see illustration.)

"No. 5, opposite side of lagoon to No. 4. Foundation just made, 23rd October. Completed and three eggs 3rd November."

The little *Cisticola*, when enjoying itself in mid-air singing, makes a hissing noise preceding "tweet" sounded two or three times. I have noticed this bird in Victoria, mostly from September to March.

The little Grass Warbler must be included in the list of the foster-parents of the Bronze Cuckoo (*C. basalis*), since a nest was found on King Island containing eggs of the Warbler together with an egg of the Cuckoo. This interesting combination was exhibited at the Field Naturalists' Club, January, 1889, by Mr. G. A. Kcartland, and recorded by me at the time.

183.—*ACANTHIZA NANA*, Vigors and Horsfield. —(226)

LITTLE TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 60.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 292.

Previous Descriptions of Eggs.—Ramsay: P. Z. S., p. 573 (1866);
Campbell: Southern Science Record (1882); North: Austn.
Mus. Cat., pl. 13, fig. 16 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, and South Australia.



GRASS WARBLER'S NEST

From a Photo by the Author

Nest.—Oval in form, with side entrance; composed of shreds of stringy-bark, &c., sometimes entirely of grasses; lined inside with soft material such as feathers, thistle-down, &c. Usually situated among the topmost branchlets of a scrubby bush, suspended in a small tree, or placed in a grass tussock, according to circumstances. Dimensions: breadth, 3 inches; length, 5 to 6 inches; entrance, 1 inch across.

Eggs.—Clutch, three to four; elongated in form; texture exceedingly fine; surface slightly glossy; colour, warmish-white, finely freckled with reddish-brown and dull-purple, the markings being thickest on the apex. Dimensions in inches of a proper clutch: (1) 7×48 (2) 69×47 , (3) 65×48 ; another set has a pure white ground, sparingly and minutely freckled with dark-brown on the larger end: (1) 69×48 , (2) 68×48 , (3) 68×48 .

Observations.—This, the brightest coloured of the smaller Acanthizas, enjoys a habitat nearly as extensive as that of the Little Brown Tit, but is not so numerous, and is more of an open timber dweller.

Gould mentions the nest of the Little Yellow Tit, but not the colour and number of the eggs.

Dr. Ramsay states that in New South Wales:—"The nest of this species is not by any means as neat a structure as that of *A. lineata*; it is, moreover, placed in situations quite different, the entrance having its edges but roughly finished off, and not covered with any hood.

"The Yellow Acanthiza shows a decided preference for the tops of the native tea-trees, but its nest may also be found in various other trees and shrubs, but always placed among the outside twigs. We have taken nests from a species of acacia overhanging the creeks and rivers. Sometimes they are wholly composed of fine strips of stringy-bark, which, when new, give them a reddish-brown appearance. At other times they are composed of dry grass, a great quantity of white cob-webs being used in all cases.

"The birds may be found breeding in September and the three following months, and are frequently the foster-parents of *Chalcococcyx plagiatus* and *C. basalis* (Bronze Cuckoos)."

184.—ACANTHIZA INORNATA, Gould.—(225)

PLAIN-COLOURED TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 59.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 293.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 371 (1865); North: Proc. Linn Soc., N.S. Wales, vol. ii., 2nd ser., p. 406 (1887).

Geographical Distribution.—South and West Australia.

Nest.—Globular, with side entrance near top; composed chiefly of

grasses; lined inside with feathers or other soft material. Usually situated in a low bush or small tree, such as jam-wood (*Acacia*), banksia, &c.

Eggs.—Clutch, three; elongated in form or tapering towards one end; texture of shell very fine; surface slightly glossy; colour, warmish or pinkish-white freckled with reddish-brown and purplish-brown, the markings coalescing and forming a distinct belt round the apex. Dimensions in inches of a pair: (1) $\cdot 68 \times \cdot 47$, (2) $\cdot 66 \times \cdot 46$.

Observations.—This plain-coloured bird is one of the two south-western species of *Acanthizas*, but perhaps is a dweller of the more interior tracts and ranges farther to the eastward than the *A. apicalis*, Gould having collected it on small islands at the mouths of Spencer and St. Vincent Gulfs.

Gould mentions the nests and eggs, but I think there is a mistake about the latter being five in number. There are in the Australian Museum a nest and eggs collected by Mr. George Masters in West Australia, 1868, which are described in the Catalogue of that institution. The nest measures 4 inches in length by 3 inches in breadth, the entrance, being oval, $1\frac{1}{2}$ inches across by 1 inch the opposite way. It is a dome-shaped structure, composed of dried wiry stems of a drosera (sundew plant), and the flowering portions of banksia cones, spiders' webs, &c., all matted together, and lined inside with white downy seeds of a composite plant.

The notes of the Plain-coloured Tit reminded me much of those of the Yellow-tailed Tit.

Breeding months probably the same as *A. apicalis*.

185.—ACANTHIZA PUSILLA, White.—(220)

BROWN TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 53.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 294.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 365 (1865); Ramsay: P. Z. S., p. 574 (1866).

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.

Nest.—Small, oval, with side entrance partly spouted or hooded; composed chiefly of fine grass, with a few spiders' cocoons added; lined inside with fur and feathers. Usually situated in low scrub, ferns, or attached to branchlets of a small tree. Dimensions: breadth, 3 inches; length, $4\frac{1}{4}$ inches; entrance, 1 inch across.



NEST OF THE STRIATED TIT

From a Photo by the Author.



NEST OF THE BROWN TIT

From a Photo by the Author.

Eggs.—Clutch, three; inclined to oval in shape; texture of shell very fine; surface slightly glossy; colour, warm or pinkish-white, finely freckled with reddish-brown, generally forming a zone round the apex. Dimensions in inches of a proper clutch: (1) $\cdot 68 \times \cdot 48$, (2) $\cdot 67 \times \cdot 48$, (3) $\cdot 65 \times \cdot 46$. (Plate 10.)

Observations.—This common coloured little bush bird ranges throughout the eastern portion of Australia, possibly being more plentiful towards the south.

According to Mr. K. Broadbent, the Little Brown Tit is not uncommon at Herberton and in the mountain scrubs at the back of Cardwell, Northern Queensland. He relates that when standing with Mr. Meston on the summit of the central peak of Mount Bellenden-Ker, one mid-winter day, the Little Brown Tit was the sole representative of animal life to obtrude itself upon the notice of the explorers, its chirrup alone breaking the oppressive silence there reigning.

It is an active little bird, and at times emits pretty warbling notes, in fact, it was called the Dwarf Warbler* in Latham's early work.

Dr. Ramsay writes:—"Upon every occasion that we have discovered its nest it has been placed within a few inches of the ground. One I have at present before me is suspended to the underside of a fern (*Pteris aquilina*); it is a closely interwoven, dome-shaped structure, in form resembling that of *A. lineata*, but differs from it in the outside being made as rough as possible with coarse pieces of strong bark and grasses, which hang down and stick out in various directions. It is composed chiefly of stringy-bark and the white paper-like bark of the tea-tree, lined inside with cotton-tree down and feathers; length 4 inches by 3 inches in breadth.

"Besides being the foster-parent of the *Chalcococcyx basalis* and *C. plagosus*, this species frequently rears the young of *Caecomantis flabelliformis*; three nests out of four lately found of this *Acanthiza* contained an egg of the *C. flabelliformis*."

I have found the nest of the Little Brown Tit in the Mordialloc scrub in August. The middle of September, 1888, I noted in that locality three nests—one built, one containing eggs, and one with young. Mr. North has noted the bird building in New South Wales as early as the 20th June, therefore the breeding season may be said to extend from June to November or December, during which period no doubt two or three broods are reared.

This Tit's nest, together with that of the Striated Tit, make a good pair for a picture. By reference to the illustration it will be noticed that the latter nest is on a musk branchlet.

* Some recent authors use the term Thornbill—a name already applied to a number of Humming Birds—as a vernacular name for the *Acanthizas*.

186.—*ACANTHIZA DIEMENENSIS*, Gould.—(221)

TASMANIAN TIT (BROWN-TAIL).

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 54.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 295.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 366 (1865); North: Austn. Mus. Cat., p. 134 (1889).

Geographical Distribution.—Tasmania and islands in Bass Strait.

Nest.—Globular, with side entrance near top; composed of fine grass, dead leaves, moss, wool, &c.; lined inside with fur and feathers. Usually placed low in dry grass or in heath-like scrub, not unfrequently upon the ground under a fallen tree branch.

Eggs.—Clutch, three; inclined to oval in shape; texture of shell very fine; surface glossy; colour, warmish or pearly-white, finely freckled, particularly in the form of a zone round the apex, with reddish-brown and purplish-brown. Dimensions in inches of a proper clutch: (1) $\cdot 69 \times \cdot 5$, (2) $\cdot 68 \times \cdot 5$, (3) $\cdot 68 \times \cdot 5$.

Observations.—The "Brown-tail," or Tasmanian Tit, is restricted to Tasmania and some of the Bass Strait islands, where it represents the Little Brown Tit of the mainland, but differs from it, as Gould points out, by possessing a more lengthened bill and being altogether of a larger size.

During my visit to Tasmania, 1883, I had an opportunity of recording the lapse of time between the laying of each egg in a nest of this Tit that was in a hedge near the homestead of "Ridgeside." A delivery occurred every other day, thus:—First egg, Wednesday, 17th October; second egg, Friday, 19th; and third egg, Sunday, 21st. The nest also contained the egg of Fantailed Cuckoo (*C. flabelliformis*), which was abstracted on the 14th, or before the *Acanthiza* commenced to lay.

I once watched a bird commence the construction of a new nest by removing the material from an old nest. Only one bird appeared then at work.

The late Rev. T. J. Ewing, in his original and necessarily crude "Catalogue of Birds of Tasmania," published in the "Tasmanian Journal," 1840, mentions a species of Tit other than the Tasmanian frequenting Flinders Island. However, subsequent authorities have not yet proved the statement.

Chief laying season September to November, but the entire breeding season is covered by the months from August to January, during which period two or more broods are reared.

187.—*ACANTHIZA APICALIS*, Gould.—(223)

BROAD-TAILED TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 57.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 296.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 368 (1865).

Geographical Distribution.—South, West, and North-west Australia.

Nest.—Roundish in form, with side entrance near the top; composed of grass, fine shreds of bark, and spiders' cocoons, whitish or greenish in colour; warmly lined inside with feathers. Usually situated in a low bush a foot or two from the ground, at other times just out of reach, in scrub. Dimensions: breadth, 3 inches; length, $3\frac{1}{2}$ inches; entrance $\frac{3}{4}$ to 1 inch across.

Eggs.—Clutch, three; inclined to oval in shape; texture of shell very fine; surface slightly glossy; colour, delicate pinkish-white, blotched and spotted (some examples being more streaked longitudinally) with chestnut or reddish-brown and purplish-brown, the markings being more numerous about the apex. Dimensions in inches of a proper clutch: (1) $\cdot69 \times \cdot52$, (2) $\cdot69 \times \cdot51$, (3) $\cdot68 \times \cdot5$.

Observations.—In forested localities of West Australia this Tit is as numerous as its eastern prototype (*A. pusilla*) is in Victoria or New South Wales, consequently, I found several nests during my peregrinations in the great western territory. With respect to the nest and eggs, I can vouch for all Gould has stated concerning them, save that the eggs reach a maximum of five in number. I never found more than three in a clutch. The only other instance I am aware of where a larger number than three is laid by Tits is, in the case of the Tasmanian species, which occasionally lays a quartet. But I have already stated that it appears a distinct feature in the habit of some of the Tasmanian birds to lay a clutch consisting of more eggs than do the mainland species.

Like its eastern representative, the western Tit has the task of rearing the young of the Bronze Cuckoo (*C. plagosus*).

The following are my data referring to western Tits:—

"21st October, 1889.—Found *Acanthiza's* nest with three eggs. Also met a boy with eggs of same species.

"22nd October, 1889.—Took *Acanthiza's* nest with three eggs.

"October, 1889.—Took two or three containing odd eggs, besides the single egg of the Bronze Cuckoo.

"8th November, 1889.—Took *Acanthiza's* nest with three eggs in melaleuca scrub. This nest was constructed principally of melaleuca bark, and warmly lined with soft yellowish grass seeds, hair, and feathers."

Breeding months August to December. The Calvert Expedition found several nests containing eggs during the first-mentioned month (1896).

188.—*ACANTHIZA PYRRHOPYGIA*, Gould.—(224)

RED-RUMPED TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 58.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 296.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1885); North: Austn. Mus. Cat., p. 136 (1889).

Geographical Distribution.—New South Wales (interior probably), Victoria, South and West Australia.

Nest.—Globular, with side entrance; composed of strips of fine bark, grass, &c.; lined inside with feathers and other soft material. Generally situated in a hakea or other bush, or placed in the thick parasitical creeper (*Cassytha melantha*), locally known as the mallee vine, which usually envelopes small trees. Dimensions: breadth, 3 inches; length, 4 inches; entrance, $\frac{3}{4}$ inch across.

Eggs.—Clutch, three; short or roundish in form, but sharply pointed towards one end; texture of shell very fine; surface slightly glossy; colour, warm-white, speckled with chestnut or reddish-brown and purplish-brown, the markings inclining to form a patchy zone round the apex. Dimensions in inches of a pair: (1) .66 × .5, (2) .63 × .48.

Observations.—The Red-rumped Tit is another interior species, being as far as yet ascertained restricted to the Mallee and similar scrubs in Victoria and South and West Australia. Mr. Tom Carter informs me that he found this little bird numerous in a white-gum flat out east from Point Cloates (West Australia). A skin of the bird was sent for identification.

I have seen and shot the Red-rumped Tit in the Wimmera district of Victoria, where I procured a nest with eggs October, 1884. The following year the eggs were duly described by me before the Field Naturalists' Club, and the description published. Four years subsequently Mr. A. J. North described similar eggs from the same district, together with the nest (accompanied by the bird), for which he was indebted to his friend Mr. James Hill, of "Pine Rise," Kewell.

189.—*ACANTHIZA LINEATA*, Gould.—(227)

STRIATED TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 61

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 297.

Previous Descriptions of Eggs.—Ramsay: P. Z. S., p. 571, with pl. of nest (1866); Campbell: Southern Science Record (1882)

Geographical Distribution.—South Queensland, New South Wales, Victoria, and South Australia (probably).

Nest.—Inclined to oval, with side partly hooded near the top; firmly constructed of strips and fine shreds of brownish bark, interwoven with spiders' cocoons, chiefly white; lined inside with soft material. Usually situated among the swaying branchlets of a small tree or sapling. Occasionally constructed chiefly of grass, and placed in a tussock. In the ranges, the nest is mostly made of moss, lined with vegetable hair (of ferns), and feathers, and generally found swinging on the branchlet of a musk-tree. Dimensions: circumference, 11 to 12 inches, or breadth, 3 to 4 inches; length, 4 to 5 inches; entrance, $\frac{3}{4}$ inch across.

Eggs.—Clutch, three; inclined to oval in shape; texture very fine; surface glossy; colour, pearly-white, more or less spotted, particularly in the form of a zone round the apex, with chestnut or reddish-brown and purplish-brown. Dimensions in inches of a pair: (1) $\cdot 7 \times \cdot 49$, (2) $\cdot 69 \times \cdot 5$; another pair, fairly spotted with a distinct zone round the larger end: (1) $\cdot 75 \times \cdot 51$, (2) $\cdot 7 \times \cdot 5$.

Observations.—This exceedingly lively Tit has a habitat co-extensive with the Little Yellow Tit (*A. nana*), from South Queensland to South Australia, but it dwells more in eastern forest parts, where it is a common species.

Four nests, with eggs, I distinctly remember finding, (1) in a busaria bush, near Bacchus Marsh; (2) in a tussock of grass, near Dandenong Creek; (3) at the Gippsland Lakes, Christmas, 1887, made of fine strips of reddish-brown bark, and warmly lined with opossum or wallaby fur and feathers—Lyre Birds', Parrots', &c., and containing three eggs and one of the Bronze Cuckoo (*C. playosus*): and (4) in Mast Gully, Dandenongs, 22nd October, 1892, containing two eggs and one of the Bronze Cuckoo.

In the ranges the nests are chiefly constructed of moss, lined with the hair of ferns and feathers, and are usually found swinging on the branchlet of a musk-tree.

Dr. Ransay, who years ago paid particular attention to the nests of many of our Tits, states: "The nest of the Lineated *Acanthiza* is one of the most beautiful of those of our Australian birds. It is a neat, oval, compact and remarkably strong structure, in length $4\frac{1}{2}$ to 5 inches through, composed of fine shreds of stringy-bark, closely interwoven and frequently ornamented with pieces of white spiders' nests. It is warmly lined with feathers, opossum fur, or silky down from seed-pods of the native cotton tree. The nest is suspended to a thin twig at the end of some leafy bough by the top, and the small opening about two inches down the side is neatly covered with a hood which excludes both the sun and the rain. Some of the nests are without any ornament, others are decorated with pieces of white paper, bark, or with green and white spiders' nests. Long streamers of bleached sea-weed are also often used; and when the nests are placed in gullies of the ranges, a beautiful bright-green string-like hypnum (moss) is employed.

"We find this species of *Acanthiza* usually the first to commence breeding. I have taken its eggs in July, but for the most part find them from August to September. They are three in number, rather long, and of a pinky-white, zoned at the larger end with minute freckles and

irregular markings of a light brownish-red, having also a few minute linear dashes of the same colour over the rest of the surface. The zone at the tip of the larger end is extremely characteristic; a few specimens are found without it, but some, which I believe to be the eggs of young birds breeding for the first time, are of a pure white, without any markings whatever. The average length is 0·7 inch by 0·5 inch in breadth. This species has two and sometimes three broods in a year, stragglers breeding as late as December and January, and is perhaps more frequently the foster-parent of *Chalcococcyx plagosus* and *C. basalis* than any other species."

I have on one or two occasions found a Tit's nest in a cleft in bark of a stringy-bark eucalypt, but I cannot gather from my notes whether such instances were referable to the Striated or Little Brown Tit.

190.—*ACANTHIZA UROPYGIALIS*, Gould.—(222)

CHESTNUT-RUMPED TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 56.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 298.

Previous Descriptions of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. ii., 2nd ser., p. 407 (1887); Nancarrow: Victorian Naturalist (1888).

Geographical Distribution.—South Queensland, New South Wales, Victoria, and South Australia.

Nest.—Small, neat, domed or covered, with entrance at the side; composed of grass and strips of bark; lined inside with fur and feathers. Usually placed in a cleft in a hollow tree or stump, at any elevation from two feet to nearly one hundred feet above the ground.

Eggs.—Clutch, three, occasionally four; almost oval in shape; texture of shell very fine; surface slightly glossy; colour, delicate, fleshy-white, finely freckled with light reddish-brown and purplish-brown, particularly on the apex, where the markings are more congregated. Dimensions in inches of a single example: ·65 × ·48; of a full clutch (according to Mr. A. J. North): (1) ·66 × ·48, (2) ·65 × ·5, (3) ·65 × ·48.

Observations.—The Chestnut-rumped Tit—a frequenter of scrubs and forests alike—is chiefly an interior species of New South Wales, Victoria, and South Australia.

To the late Mr. K. H. Bennett's name is attached the finding of the first recorded nest of this interesting Tit, which he informed Mr. North was procured at Mossgiel, New South Wales, 15th October, 1886. The nest was placed between the upright stems of a thickly-foliaged tree, at a distance of about five feet from the ground.

However, in 1881, another field observer, likewise now deceased—Mr. R. H. Nancarrow—found the first authenticated nests in a somewhat

arid and isolated tract of Mallee country, locally known as the Whipstick, in the Bendigo district, Victoria.

I cannot do better than quote from the "Victorian Naturalist" Mr. R. H. Nancarrow's own pleasantly written account of the nidification of the Chestnut-rumped Tit:—"The Red-rumped Acanthizas' nests that I met with were built in low bushes, or in tangled bunches of scrub creeper, and I naturally expected to find nests of its congener in similar situations. More than once, on discovering a partly built nest where a pair of Chestnut-rumps was flitting about, I recorded in my notes the finding of the much coveted prize, but, to my chagrin, subsequent visits invariably proved the nest to belong to some other species, and, notwithstanding many long hours of patient watching, the nidification of this little bird remained a mystery to me until the summer of 1881.

"In October of that year, I was watching a pair, and, from their actions, I felt sure their nest could not be far from where I was standing. Presently I heard a faint "cheeping" behind me, and on turning round was delighted to see one of the birds feeding its young in the nest. Now I could see how I had hitherto been baffled, for the nest, instead of being placed among foliage, as one would expect an Acanthiza's nest to be, was actually built in the cleft of a hollow tree. In this case the nest was about seven feet from the ground, in a dead, hollow sapling, which was cleft on one side from top to bottom. The cleft gave access to the interior, where the nest—a neat, little domed structure, formed of strips of bark and grass, and lined with feathers and fur—was built.

"A few days after I saw another pair on the edge of the scrub, and, now that I had the clue, I had not much difficulty in discovering their nest. After watching them for a time, I saw one of the birds clinging to a piece of bark that was hanging from a half-burnt sapling, about six feet from the ground, and there, sure enough, was the nest, containing three eggs. The bark formed a 'pipe,' with an opening on one side. Since then I have found three other nests.

"The Red-rumped Acanthiza is confined to the scrub, but the Chestnut-rumped species is frequently met with at considerable distances from it in the surrounding forest."

One of the eggs collected by Mr. Nancarrow is in my collection. Young have been noticed early in September.

191.—ACANTHIZA SQUAMATA, De Vis.

SCALY-BREADED TIT.

Reference.—Proc. Roy. Soc., Q., vol vi., p. 248.

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—This, the most northern of our Acanthizas, is found (so I am informed by Mr. Broadbent) at the base of the Herberton Range,

and up to 3,500 feet. It appears to resemble the Yellow-rumped Tit in habit—nearly always in open forest, upon the ground, in small flocks of about half-a-dozen in number.

192.—*ACANTHIZA CHRYSORRHOA*. Quoy and Gaimard.—(229)

YELLOW-RUMPED TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 63.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 298.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848, also Handbook, vol. i., p. 375 (1865). Ramsay: P. Z. S., p. 575 (1866).

Geographical Distribution.—Queensland, New South Wales, Victoria, South and West Australia, and Tasmania.

Nest.—Bulky, lengthened in shape and divided. The nest proper is closely covered, with a spouted side entrance; above and adjoining is a semi-open structure or second nest, the whole being composed chiefly of a mass of dry grasses, leaves, wool, &c. The nest proper is lined inside abundantly with fur, feathers, or other warm materials. Situation usually among the thick branchlets of any tree of comfortable appearance, or built into the sheltered part of a hedge or bush. Occasionally placed underneath adjoining the nest of a larger bird, such as a Raven, Magpie (*Gymnorhina*), or Eagle. Dimensions over all: breadth, $4\frac{1}{2}$ inches; length, 7 to 8 inches, the nest proper being about $4\frac{1}{2}$ inches in length; entrance, 1 inch across; semi-open top nest 2 inches wide (internally).

Eggs.—Clutch, three to four usually; elongated in form; texture of shell very fine; surface glossy; colour, usually pure white, but occasionally faintly speckled, especially on the apex, with dull-red. Dimensions in inches of a full clutch: (1) $.75 \times .51$, (2) $.74 \times .5$, (3) $.72 \times .51$, (4) $.71 \times .5$.

Observations.—The Yellow-rumped, or common "Tom" Tit is one of the most familiarly known of small Australian birds, and, except in the extreme north, is found throughout Australia, including Tasmania, in which place it is commonly called the "Yellow-tail." The large massive nest is also a familiar object in the country. Who has not robbed a Tom Tit's nest of its eggs of pearly whiteness? or who has never speculated about the utility of the attached second nest, or "upper story," so to speak? As boys, we naturally thought it was the roosting-place for the male bird, or wherein, as Gould states, "he may sit, in order to be in company with the female during the task of incubation." But Gould entertained doubts as to his own solution for the use of the second nest.

I have heard it suggested that the upper nest is built to deceive natural enemies who, when they discover a nest and see the vacant space, pass on, supposing the home to be empty. Other persons say it is an intermediate shelter for the fledgelings when they have grown too big for the lower story, but not strong enough to fly.

I myself am inclined to agree with the schoolboy solution, that the second nest is really a comfortable shelter-place not only for the male but also for the female, as required. We know that some Finches and the Babbler (*Pomatorhini*) build shelter nests. Why not the Yellow-tailed Tit?

The nests of the Yellow-tailed Tits are frequently the receptacle of the single egg of both Bronze Cuckoos.

It is difficult to define a reason why the Yellow-tailed Tits, like Finches and Xerophilas, should occasionally build their homes underneath and adjoining the nests of such birds as Magpies, Ravens, and Eagles. Two instances of the Tit's nest attached to a Magpie's came under my own notice while in Tasmania. At Corra Linn, on the 13th October, 1883, in company with the late Mr. F. H. Reed, I found such a combination, and three days afterwards at Ridgeside I found another, with fresh eggs in both nests—two in the Tit's and three in the Magpie's.

I possess the following note from Mr. C. Brittlebank:—"29th August, 1893.—Nest of Yellow-tailed Tit attached to under side of Magpie's nest. Found one also on Eagle's nest."

At Pyke's Creek, South Queensland, Mr. Hermann Lau records having found a clutch of five eggs in the nest of a Yellow-tail, and that the birds for several successive seasons built in a bulky rose bush.

Mr. Jas. G. McDougall, writing from Yorke Peninsula, South Australia, says, regarding this species, "six eggs are not unusual," but he did not denote whether he meant a clutch including Cuckoos' eggs. I may here mention, in regard to the Yellow-tailed Tit laying eggs white and sometimes faintly spotted, I never recollect finding both in the same nest. Instances of nests with the spotted eggs are in small proportion to the number of nests with the usual pure white eggs.

Mr. C. French, junr., reported a nest containing eggs observed in Fawcner Park, near Melbourne, 20th May, 1896, while a nest, built in the usual way, containing three fresh eggs, was found 11th July, 1894, near Owen Springs, Central Australia, during the Horn Expedition.

Breeding months are, of course, chiefly in the spring and summer season, but occasionally in autumn and winter, according to locality and season.

A few birds occasionally continue constructing or adding to their nests after the eggs have been laid—the Yellow-rumped Tit is one. Mr. C. C. Brittlebank tells me he has noticed the Little Tit, Red-browed Finch, Swallow, Fairy Martin, and White-throated Tree Creeper doing so likewise.

193.—*ACANTHIZA REGULOIDES*, Vigors and Horsfield.—(230)

BUFF-RUMPED TIT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 62.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 299

Previous Description of Eggs.—Ramsay: P. Z. S., p. 575 (1866)

Geographical Distribution.—South Queensland, New South Wales, Victoria, and South Australia.

Nest.—Oval, domed or covered in, with small side entrance; composed of fine grasses and strings of bark, interwoven with cob-webs; warmly lined inside with feathers, &c. Usually placed at no great height in the fork of any tree, sometimes in a cleft in the bark of a tree stem, or near the ground in a tussock of grass. Length, 4 inches; breadth, $3\frac{1}{2}$ inches.

Eggs.—Clutch, three to four; roundish-oval in form; texture of shell very fine; surface glossy; colour, warm-white, freckled, especially in the form of a belt round the apex, with reddish-brown and purplish-brown. Dimensions in inches of a proper clutch: (1) $\cdot64 \times \cdot48$, (2) $\cdot63 \times \cdot49$, (3) $\cdot62 \times \cdot47$.

Observations.—With the exception of Western Australia, the Buff-rumped Tit is found in all the States, especially in the interior parts or in open timbered country. However, the bird is not so common as its cousin, the Yellow-rumped Tit. It has been obtained in the country between Melbourne and the Dandenongs.

Gould just mentions the nest and eggs, while Dr. Ramsay has gone into interesting details, recording:—"Little or no preference seems to be shown in the selection of a site for the nest of this bird. It is a dome-shaped structure, having a small entrance in the side, and composed of grasses and stringy-bark, &c., lined with feathers, cotton tree down, or opossum fur. It is placed in a tuft of grass or low bushy scrub, but just as often among the loose pieces of bark which, having accumulated in the forks of the eucalypti, hide all except the entrance of the nest. A hole morticed in the side of a post, and the fork of a tea-tree where rubbish has accumulated, alike serve its purpose, the shape depending upon the position chosen. The nests resemble those of *Malurus cyaneus* both in size and shape; they are, however, much more bulky, thicker, and have a great quantity of lining, which renders them much warmer and more comfortable. The eggs, which may be taken from August to December, are four in number, $0\cdot6$ to $0\cdot7$ inch in length by $0\cdot4$ to $0\cdot5$ inch in breadth, having a delicate white ground, spotted, speckled, or dashed with markings of reddish-brown of various tints and a few of purplish lilac-brown, in most forming a zone at the larger end; the eggs of the young, breeding for the first or second time, are white, without any markings. This species has three broods during the season, and if the nest be taken will frequently build another in the same place."

With regard to this *Acanthiza*, or Tit, in Queensland, Mr. Charles Barnard mentions he has never found the nest anywhere but in a fork of a small tree, save one which was built in the crack of a hollow stump, and has never found it suspended from a branch as in the Yellow-rumped Tit.

A nest I found during the last camp out of the Field Naturalists' Club of Victoria, to the Lerderderg Ranges, was situated in a tussock of grass on a steep sidling. In addition to the usual set of eggs, the nest contained an egg of the Bronze Cuckoo. Date, 9th November, 1899.

194.—*ACANTHORNIS MAGNA*, Gould.—(228)

SCRUB TIT.

Figure.—Gould: Birds of Australia, fol., supp., pl. 28.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 308

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882), North: Austr. Mus. Cat., app (1890).

Geographical Distribution.—Tasmania.

Nest.—Not unlike that of a Scrub Wren (*Sericornis*), large, globular, with side entrance; outwardly composed of strips of bark (*Eucalyptus*), intermingled with grass, moss, rootlets, &c.; lined inside with feathers. Usually situated low or within reach in a thick bush, sometimes in dead or fallen boughs of tea-tree (*Melaleuca*) scrub, but occasionally placed high up in that scrub. Dimensions: diameter about 8 inches; entrance about $1\frac{1}{2}$ inches across.

Eggs.—Clutch, three; the usual *Acanthiza* type; oval inclined; texture of shell fine; colour, pearly-white, moderately blotched, especially about the larger end, with chestnut or reddish-brown and purple-brown. Dimensions in inches of a pair: (1) $\cdot 76 \times \cdot 54$, (2) $\cdot 74 \times \cdot 54$; of a single example: $\cdot 72 \times \cdot 53$. (Plate 11.)

Observations.—This interesting bird is peculiar to Tasmania, where it was first found in the neighbourhood of Mount Wellington, but since has been observed in similar localities in other parts of the island.

There has been some little confusion about the genus to which the bird should be assigned. Gould, from his single specimen, for which he was indebted to Mr. Ronald C. Gunn, placed it among the *Acanthizæ*, from which the British Museum Catalogue transformed the name to *Sericornis*. But, oologically speaking, it is more an *Acanthiza*. However, Colonel Legge has founded the new genus, *Acanthornis*, for the creature.

During my visit to Tasmania, October, 1883, I was instrumental in re-discovering this *rara avis*. Nothing had been heard of the species for thirty years, or since Gould figured and described Mr. Gunn's specimen. In fact, one prominent Tasmanian naturalist informed me he doubted the existence of such a bird upon the island.

The securing of the second example came about thus. In Hobart I met Mr. Arthur L. Butler, an energetic oologist. On cross-questioning that gentleman closely about the supposed *Acanthiza*, he said he had undoubtedly observed a bird resembling it near Mount Wellington; therefore, by appointment, one afternoon we went in search, taking with us a breech-loader and a few charges of dust shot. We were about to return without accomplishing the object of our outing, when a small bird was seen to dart through the undergrowth. Quick as thought Mr. Butler discharged the

gun, and retrieving a small bird, placed it in my hand. It was none other than the *Acanthiza (Acanthornis) magna*.

The skin was loaned for inspection, at the request of the curator, to the Australian Museum, Sydney, and is now in the private collection of a friend, Mr. Joseph Andrews, Melbourne.

The original description of the egg of the Scrub Tit, which appeared in my manual, was furnished to me by the Rev. H. T. Hull, an observing naturalist in Tasmania, while the eggs in my cabinet are direct from the collection of that field enthusiast, Mr. G. H. Hinsby, formerly of Hobart, who also kindly supplied me with descriptions and situations of various nests found by him.

I quote one of his notes, 1887:—"I carefully avoided a particular locality on account of its being full of high trees, too high I thought for *A. magna*; but one morning I chanced to return home through the place in question and found two nests of *A. magna*, both with young just hatched, high up in the tea-tree—a good climb. In fact, I should never have looked so high, as I have always found their nests low, almost within reach from the ground."

October and November are the months when the Scrub Tit usually nests.

195.—PYRRHOLÆMUS (SERICORNIS) BRUNNEA, Gould.—(235)

RED THROAT.

Figure.—Gould: Birds of Australia, fol., vol. vii., pl. 68.

Reference.—Cat. Birds Brit Mus., vol. vii., p. 302.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 49, pl. 3, fig. 8 (1882); North: Austr. Mus. Cat. pl. 9, fig. 15 (1889).

Geographical Distribution.—New South Wales, Victoria, South, West, and North-west Australia.

Nest.—Similar to that of a *Malurus* (Wren); composed wholly of grasses loosely thrown together without being interwoven more than necessary to keep them in their place; lined inside with hair or fur. Usually placed on its side among the twigs of a small bush with grass growing through its branches near the ground and hidden by the grass. Dimensions 5 inches in diameter by $3\frac{1}{2}$ inches across outside. There is no hood over the opening (Ramsay).

Eggs.—Clutch, three to four; short or stout oval in shape; texture of shell fine; surface glossy; colour, olive-brown or purplish-buff in belts of a darker shade as the larger end is approached. In some examples, instead of belts there appear dark indistinct markings. Dimensions in inches of a proper clutch: (1) $.75 \times .55$, (2) $.7 \times .56$, (3) $.66 \times .54$; odd examples: (1) $.72 \times .56$, (2) $.72 \times .56$. (Plate 11.)

Observations.—This is another singular and little understood bird—a dweller in the thick scrubby places in the great interior provinces.

The bird is reputed to possess a sweet melodious song.

Gilbert, writing to Gould from West Australia, says the Red-throat “makes its nest on the ground, precisely like the members of the genus *Calamanthus*. I found a pair building in the month of September; upon visiting the spot again, after an interval of a week, the nest appeared finished, being lined with feathers, but there were no eggs: unfortunately, from this time the birds deserted the nest.”

In connection with the Calvert Expedition, during the flying trip taken by Messrs. L. A. Wells and G. L. Jones, in August (1896), they found a beautiful clutch of three eggs of this species. The nest was in a thick bush about three feet from the ground.

196.—*SERICORNIS CITREOGULARIS*, Gould.—(213)

YELLOW-THROATED SCRUB WREN.

Figure—Gould Birds of Australia, fol., vol. iii., pl. 46.

Reference.—Cat Birds Brit. Mus., vol. vii., p. 302.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1845), also Handbook, vol. i. p. 356 (1865); North: Austn. Mus. Cat., p. 129, pl. 9, fig. 5 (1889).

Geographical Distribution.—Queensland, New South Wales, and Victoria (Eastern).

Nest.—Bulky, bottle or pear-shaped, with hooded side entrance; outwardly composed of trails of beautiful golden-green moss with a mixture of black thread-like rootlets, especially about the entrance; occasionally a few dead leaves are interwoven; lined inside with soft grasses and a plentiful supply of feathers, &c. Usually suspended by the neck from a low branch or lawyer palm (*Calamus*) cane in thick scrub, more frequently overhanging a water-course. Dimensions: length 15 or 16 inches; diameter in broadest part 5 inches, in narrowest $1\frac{1}{2}$ to 2 inches; entrance 1 inch across.

Eggs.—Clutch, two to three; elongated or long oval in form; texture of shell fine surface glossy; colour, varies from vinaceous to light purplish-buff, usually of a darker shade on the apex, or with a belt of indistinct markings of dark purplish-brown or umber. Some specimens resemble in a remarkable degree the colour of a ripe acorn. Dimensions in inches of a proper pair: (1) $1\cdot08 \times \cdot67$, (2) $\cdot99 \times \cdot69$; of a slightly shorter pair: (1) $\cdot98 \times \cdot7$, (2) $\cdot98 \times \cdot7$. (Plate 11.)

Observations.—This, the finest and largest of these dull-coloured but interesting and active birds, inhabits the dense tropical scrubs of Queensland and New South Wales. I have observed it at home in both States, taking many nests and eggs in the Big Scrub of the latter locality, where the birds are numerous. Mr. Kendall Broadbent states that the Yellow-breasted Scrub Wren finds its way as far south as Victoria, and he often found it when shooting in Gippsland many years ago. He never found it as far north as Cape York. Rockingham Bay seemed to be its northern limit.

Here is a serene gully where every tree stem is decorated with moss of different species, where the walking-stick palms wave their crowns in contrast to the bright-green erect crests of ferns, and where large semi-transparent leaves, aloft of the stinging-tree, are backed up by the dark thick foliage of bean-trees, all overshadowing here and there clear rocky pools of water! In such places do the Yellow-throated Scrub Wrens love to hang out their golden-green nests composed of matted mosses.

I can bear testimony to that part of Gould's statement which says that the pear-shaped, perpendicular, mossy nests are exceedingly attractive when observed hanging in the humid scrub. But the Sericornis does not construct its home within the mossy masses, but rather gathers the moss and masses it into a wonderful and beautiful nest, which is hung out in the "corridors" of the scrub, as if to attract the attention of passers-by, or perhaps, more correctly speaking, made to assimilate the pendulous mossy ornaments of the forest in order to put the birds' natural enemies "off the scent." (See illustration.)

Repeating in part my technical description of the nest, it is decidedly bulky (about 18 inches in circumference at the broadest part) in comparison with the size of the owner, and outwardly constructed of beautiful string-like, golden-green moss, which covers a ply of wiry rootlets, then comes a copious lining of feathers of various scrub birds. In one nest I detected Cat, Regent, and Satin Birds', Brown and Wonga Pigeons' and, I fancy, Lyre Birds' feathers.

Gould has accurately described the eggs, which, as a field naturalist once aptly mentioned, resemble ripe acorns.

Dr. Ramsay, in 1866, took both nests and eggs in the same district (zoologically speaking) where I obtained mine.

Speaking of the Yellow-throated and Large-billed Scrub Wrens in Southern Queensland, where they are called "Devil Birds," Mr. H. Lau says:—"There are two (major and minor), both inhabitants of the dense sea-coast scrubs, where the birds may be met with in the darkest places alongside mountain streams, where neither sun nor moon can penetrate (hence the name 'Devil Birds')."

"In many cases the nests hang within reach of man. Bats like such abodes, taking the deserted summer dwellings for their winter quarters."

Breeding months August to December or January, the chief month for fresh eggs being probably November.



NEST OF THE YELLOW-THROATED SCRUB WREN

From a Photo by the Author.

197.—*SERICORNIS FRONTALIS*, Vigors and Horsfield.—(216)
S. minimus, Gould.

WHITE-BROWED SCRUB WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 49; Gould: Birds of New Guinea, vol. iii., pl. 7.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 304.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 359 (1865); North: Austrn. Mus. Cat., p. 132, pl. 9, fig. 16 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, South Australia, and Kent Group (Bass Strait).

Nest.—Bulky, roundish in shape, with side entrance; somewhat loosely constructed of grass, moss, bark, and dead leaves and fronds; lined inside with fine grass and feathers. Usually placed near the ground in thick scrub or in *debris*. Dimensions, outward diameter, 5 or 6 inches; entrance, about 1 inch across.

Eggs.—Clutch, three; swollen oval in shape; texture of shell fine; surface glossy; colour varies from warmish or buffy-white to light purplish-buff, splashed and streaked with short marks of purplish-brown, sometimes chestnut, thickest on the apex, where they coalesce in the form of a zone. Dimensions in inches of a proper clutch: (1) $\cdot 85 \times \cdot 62$, (2) $\cdot 84 \times \cdot 64$, (3) $\cdot 84 \times \cdot 63$.

Observations.—The White-fronted, or more descriptive still, the White-browed, Scrub Wren, is a common species, enjoying a habitat throughout the whole length of Eastern Australia.

According to the "British Museum Catalogue," Gould's smaller bird, *S. minimus*, is merely a northern variety of *S. frontalis*, and shows very distinctly the white eye-stripes. The question of variation of sub-specific differences in birds is very perplexing to ornithological students. There is another and insular variety of the White-browed Scrub Wren, which was first found during the expedition of the Field Naturalists' Club of Victoria to Kent Group, in 1890, for which Colonel Legge has proposed the sub-specific name *gularis*,* on account of its marked difference (darker) on the throat. It has also a conspicuously larger bill, and there are other minor points which serve to distinguish it from the mainland variety.

The White-browed Scrub Wren and the White-naped Honeyeater (*Melithreptus lunulatus*) were two mainland species of birds, which we found on Kent Group, that are not found in Tasmania.

There are various conjectures as to how the birds first came there. Their progenitors may have been carried to their insular quarters (about forty-five miles from the mainland) by the north-west gales that

* "Victorian Naturalist," vol. xiii, p. 84 (1896).

occasionally prevail. This agency may likewise account for the presence of the European Sparrow on Kent Group, which undoubtedly came from Victoria.

Another cause may be the visitation of great forest fires in Gippsland, such as occurred in 1897-8. Indeed, Captain Simpson, of the steamer "Thermopylae," did report on that occasion, that when off the Gippsland coast line it was completely obscured, and as immense volumes of smoke curled up from the fires and were blown seawards by a strong land breeze, thousands of insects and hundreds of birds were carried from their haunts far out to sea, numbers alighting on the rigging and decks of the steamer.

I have procured White-browed Scrub Wrens from the Big Scrub of New South Wales, and have taken many of their nests artfully hidden away in scrub or forest débris in many localities in Victoria, notably in the coastal thickets of tea-tree (*Leptospermum*), where these birds may be said to be plentiful and breed early, some commencing to lay in August. In the season of 1888 I took three nests with each three eggs, on the 6th August. The following year, in September, I noticed five or six freshly-built nests, and one containing three fresh eggs.

Mr. C. F. Belcher reports that at the end of July, 1893, he took six nests, with eggs, of a *Scricornis*, in the Polygonum scrub, Lake Connemarré. I did not see a skin, but I believe the bird to be referable to this species. Some of the nests were on the ground, others were placed in tea-tree (*Melaleuca*), at a height varying from seven to eleven feet above ground.

Although this Scrub Wren usually builds low, I also recollect taking a nest with eggs, ten or twelve feet from the ground, or rather above water, near the tops of some melaleuca, on Phillip Island, Western Port, October, 1880.

Breeding months July to November or December.

Regarding the White-browed Scrub Wren, and from knowledge gained through a correspondent in the Heytesbury Forest, Mr. Robert Hall states:—"Before any sign of a nest was shown, a *Scricornis* placed a few grasses together in a thick-leaved bush, and continued to increase the mass for thirty minutes, when it discontinued, and gave vent to a number of grating notes to make up for lost vocal time, and appealed to its mate, who had been hopping about branches close by watching the operation, for a recognition of its work. This was at 11 a.m., and it then adjourned work till 6 a.m. the following morning, when one hour's work was given to the nest, during the whole of which time a series of peculiar grating calls was given off, and nothing more was done until the same hour of the third morning (18th September, 1896), when the roomy cell of homogeneous plant-matter received the addition of an inner wall of another grassy material (mainly old withered leaves). The bird now made an alteration in its time table, and during the fourth, fifth and sixth mornings, laboured from about an hour before noon to an hour after, working leisurely throughout the time until the lining was completed. On the seventh day the first egg was laid; colour brownish-purple spots and short streaks on a ground of lighter



NEST OF THE WHITE-BROWED SCRUB WREN.

From a Photo by the Author.



WHITE-BROWED SCRUB WREN'S NEST IN BANK

From a Photo by the Author.

similar shades. The second egg was deposited on the ninth day of the month, and the third egg on the eleventh. On the fourteenth the bird had set itself to the task of incubation.

"In regular visits to four nests the eggs were found to be laid each forenoon early; the young birds hatched out on the twenty-third day from the time of laying third egg, and the young were able to fly on the fifteenth day from the breaking of the shell. The family immediately begins a nomadic life, and the locality is left to other birds before the morning of the following day. During the time of incubation the sitting bird leaves the nest to feed at early morning and evening, and at night returns with a small feather or some downy plumage, so that gradually the internal layer of its house is completed to its satisfaction.

"In six nests observed in that district, two were lined with fur of rabbits, the others with feathers; all were inclined, with entrance protected from above, and all faced the north-east, which is the fine weather quarter at that period of the year. It was noticeable that the intelligence of the birds led them to build the external portion of their dome nest during rain or in early morning, when the wiry grasses are pliable, and the wet-softened material could be more easily adjusted to the required shape, while the inner layer was constructed at mid-day, when the material was drier."

Illustrations of two nests of the White-browed Scrub Wren are given.

198.—*SERICORNIS MAGNIROSTRIS*, Gould.—(219)

LARGE-BILLED SCRUB WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 52.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 305.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 363 (1865); North: Austn. Mus. Cat., p. 132 (1889).

Geographical Distribution.—Queensland, New South Wales and Victoria.

Nest.—Very similar in shape and construction to that of the Yellow-throated Scrub Wren (*S. citreogularis*), but a trifle smaller, being moss-made, with a greater mixture of dead leaves, portions of flags and wire-like rootlets. Fairly lined inside with feathers, but not so profusely as in the case of the Yellow-throated Scrub Wren's nest. Usually suspended from pendulous branches or from lawyer palm (*Calamus*) canes, from three feet to thirty feet above the ground, in the densest of scrub.

Eggs.—Clutch, three, occasionally four; inclined to oval in shape; texture of shell fine; surface glossy; colour, dull or buffy-white, finely freckled and splashed with purplish-brown, the markings forming a

zone round the apex. Dimensions in inches of a proper clutch: (1) $\cdot 76 \times \cdot 54$, (2) $\cdot 75 \times \cdot 55$, (3) $\cdot 75 \times \cdot 54$; of a pair: (1) $\cdot 73 \times \cdot 55$, (2) $\cdot 71 \times \cdot 55$. (Plate 10.)

Observations.—The modest-coloured Large-billed Scrub Wren is a dweller of the rich humid eastern scrubs, enjoying nearly the same range of habitat as its Yellow-throated congener (*S. citreogularis*), but the bird is somewhat shy in disposition.

Mr. Harry Barnard found the Large-billed Scrub Wren at Cape York, Queensland, season 1896-7, while Mr. A. C. Smart kindly lent me a skin of this bird which he shot from a small family at Loch, South Gippsland, October, 1897. No doubt these two localities are the respective limits north and south of the distribution of this species.

The nests of both the Scrub Wrens, *S. citreogularis* and *S. magnirostris*, resemble each other in their mossy construction, but of course the eggs of the Large-billed Wren, being about half the size, are easily separated.

Gould procured several nests, that were out of reach, by shooting and severing the branch just above the neck of the nest, which so perfectly resembled tufts of living moss attached to many of the extremities of the branches of trees, that it was almost impossible to distinguish one from the other. Gould has raised the question whether the bird purposely builds its nest in imitation of the beautiful pendulous masses of moss, or whether by bird architecture it converts one of them into a receptacle for its eggs. Judging by the many nests I had the opportunity of examining in the Big Scrub of New South Wales, I should say the bird certainly gathers the mosses, and often builds in a site where no moss grows.

I said the nests of the Large-billed and Yellow-throated Scrub Wrens resembled each other in construction and situation, but I am not so sure that the smaller bird (the Large-billed) does not, as is said in mining parlance, occasionally "jump" the nest of its larger cousin or one of its own species. This I know, that the Large-billed bird sometimes "jumps" the nests of the tiny Flyeaters (*Gerygone*).

Many times my companion and I in the Big Scrub found the Scrub Wren had enlarged upon a Gerygone's home and deposited her own clutch therein. Once we had evidence of a complete "double shuffle," for a nest we found contained no less than three clutches of three eggs each, one of the Flyeater's slightly addled, and two different sets of Scrub Wrens'. More recently Mr. H. R. Elvery found a Scrub Wren's nest (which of the two species is not mentioned), but at all events, it contained two clutches, three eggs each, of the Large-billed and a pair of eggs of the Yellow-throated.

In the nests of the Large-billed Scrub Wren, on two occasions, I took the single egg of what I believed to be the Fan-tailed Cuckoo (*C. flabelliformis*), and once the Bronze Cuckoo's (*C. plagosus*).

Mr. Lau, between the years 1865-88 has observed many of the nests of both the Yellow-throated and Large-billed Scrub Wrens in Cunningham's Gap, Bunya Mountains, and other localities in South Queensland, and states that clutches of eggs vary from two to four

in number. I apprehend quartets were rarely found, and only refer to the Large-billed Scrub Wren.

The breeding season extends from June to February, the principal months being November and December.

199.—*SERICORNIS LÆVIGASTRA*, Gould.—(217)

BUFF-BREASTED SCRUB WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 50.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 307.

Geographical Distribution.—Northern Territory and Queensland.

Nest and Eggs.—Undescribed.

Observations.—This northern Scrub Wren, Gould states, is nearly allied to *S. maculatus*, but may be distinguished by the entire absence of spots on the throat and chest, and by having the tail feathers largely tipped with white.

The type specimens, male and female, were procured by poor Gilbert, 30th November, 1844, the year he was treacherously murdered by the aborigines during Leichhardt's overland expedition from Moreton Bay (Brisbane) to Port Essington.

200.—*SERICORNIS MACULATA*, Gould.—(218)

SPOTTED SCRUB WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 51.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 307.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 362 (1865); North: Austr. Mus. Cat., p. 133 (1889).

Geographical Distribution.—New South Wales, Victoria, South and West Australia.

Nest.—Round, with side entrance; constructed of leaves, grass, &c.; warmly lined inside with feathers, and usually situated low in scrub.

Eggs.—Clutch, three; almost oval in shape; texture of shell fine; surface glossy; colour, light purplish-buff, with an indistinct band of purplish-brown round the apex; sometimes minutely freckled with the same colour. Dimensions in inches of a pair: (1) $\cdot 79 \times \cdot 58$, (2) $\cdot 78 \times \cdot 58$.

Observations.—This smart Scrub Wren possesses chiefly a western distribution, although its range is extended to all the eastern provinces (excepting Queensland).

According to the Catalogue of the Australian Museum, Mr. George Masters procured nests and eggs of this species when at King George's Sound, Western Australia, in December, 1868, confirming the descriptions given by Gould from specimens previously collected by Gilbert.

The specimens of eggs in my cabinet came from the Western Territory.

Breeding months September to December.

201.—*SERICORNIS OSCULANS*, Gould.—(215)

SPOTTED-THROATED SCRUB WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., p. 48.

Reference.—Cat. Birds Brit. Mus., vol., vii., p. 309.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882); North: Austn. Mus. Cat., p. 131 (1889).

Geographical Distribution.—Victoria and South Australia.

Nest.—Similar to that of the White-browed Scrub Wren (*S. frontalis*). Usually placed low in scrub, sometimes embedded in moss or grass upon the ground or on a sloping bank.

Eggs.—Clutch, three; inclined to oval in form; texture of shell fine; surface glossy; colour, a warmish wash or buffy-white, finely freckled with purplish-brown spots, which thicken towards the larger end, where they form a zone. Much resemble those of *S. frontalis*. Dimensions in inches of a pair: (1) .8 × .6, (2) .79 × .56.

Observations.—This Scrub Wren has a southern habitat restricted, as far as yet discovered, to Victoria and South Australia.

As Gould states, it is nearly allied to the White-browed Scrub Wren (*S. frontalis*) and the Brown Scrub Wren (*S. humilis*) and for that reason its identity is perplexing to collectors. The best method I found to understand the distinctive characters of each was to procure the typical species from their respective strongholds, say, the White-browed from New South Wales, the Allied from the scrubs of Victoria, and the Brown from Tasmania.

The Allied may be identified by having numerous distinct longitudinal blotches of black on the throat, hence perhaps the better vernacular name, Spotted-throated Scrub Wren.

In a mossy sidling of the Werribee Gorge, a Spotted-throated Scrub Wren flew out at my feet from a nest with the entrance flush with surface of the ground. Had it not been for the bird flying out, the nest would have been passed over. However, there is just a bare possibility that the bird may have been the ordinary *S. frontalis*, with spottings on the throat, which, according to Dr. Sharpe, are only a sign of age.

According to Mr. North the Spotted-throated Scrub Wren is also a lover of forest fastnesses. In Gippsland, he usually found its nest at the bottom of a clump of sword-grass or under the shelter of a projecting fern branch. I agree with Mr. North that Scrub Wrens sit at times very closely, so much so that you may peer into the nest entrance and see a pulsating whitish-coloured throat, a sharp bill, and a pair of white-encircled eyes.

202.—*SERICORNIS HUMILIS*, Gould.—(214)

BROWN SCRUB WREN.

Figure.—Gould. Birds of Australia, fol., vol. iii., p. 47.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 310.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 357 (1865); North: Austr. Mus. Cat., p. 130 (1889).

Geographical Distribution.—Tasmania, King Island and Furneaux Group.

Nest.—Somewhat large, covered in, with side entrance; composed of dead leaves, grass, moss, &c.; lined inside with fur and feathers. Usually situated on or near the ground in some thick bush or scrub. In some instances a nest has been embedded under moss upon the ground with only the entrance visible.

Eggs.—Clutch, three, occasionally four; oval inclined; texture of shell fine; colour, light purplish-buff, splashed and spotted, especially round the apex, with amber and purplish-brown. Large compared with the size of the bird. Dimensions in inches of a pair: (1) $\cdot 97 \times \cdot 68$, (2) $\cdot 9 \times \cdot 6$.

Observations.—The Brown Scrub Wren is common to Tasmania and some of the islands in Bass Strait. As to its being a Victorian bird, the statement needs to be verified by further evidence.

Some of our Scrub Wrens, in certain stages of plumage, resemble the sombre-coloured Scrub Tit; but when the latter was seen threading the thick undergrowth of such places as King Island and Flinders Island, it appeared to be much larger and different to the mainland bird.

The egg of the Fan-tailed Cuckoo (*C. flabelliformis*) has been taken from the nest of the Brown Scrub Wren.

Breeding months from August to December.

203.—*SERICORNIS GUTTURALIS*, De Vis.

WHITE-THROATED SCRUB WREN.

Reference.—Proc. Roy. Soc., Q., vol. vi., p. 244.

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—This very distinctive Scrub Wren has been found by Mr. Broadbent on the Herberton high ranges and on Bellenden-Ker, at an altitude of 5,000 feet, where it was usually in the scrub seen upon the ground in company with the Black-headed Log Runner (*Orthonyx spaldingi*).

204.—*ORTHONYX SPINICAUDA*, Temminck.—(372)

SPINE-TAILED LOG RUNNER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 99.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 329

Previous Descriptions of Eggs.—Verreaux. Revue Zoologique (1847)
Gould: Handbook, vol. i., p. 608 (1865); Diggles: Companion
Gould's Handbook, p. 45 (1877). Ramsay: Proc. Linn. Soc.,
N.S. Wales, vol. i., 2nd ser., p. 1148 (1886); North: Rec.
Austn. Mus., vol. ii., p. 15 (1892).

Geographical Distribution.—South Queensland and New South Wales.

Nest.—Somewhat large and round, with side entrance; constructed of dead sticks, leaves, and moss; situated upon the ground or on rocks in the vicinity of fallen decayed timber, sometimes near the base of a tree in dense scrub. External diameter $8\frac{1}{2}$ inches.

Eggs.—Clutch, two; slightly elliptical in shape; texture of shell fine; surface glossy; colour, pure white. Dimensions in inches of two clutches: A (1) $1.14 \times .85$, (2) $1.12 \times .85$; B (1) $1.11 \times .95$, (2) $1.06 \times .84$.

Observations.—This unique and strictly Australian form is peculiar to the dense undergrowths of South Queensland and the northern river districts of New South Wales; but it has been observed as far south as Wollongong, about fifty miles south of Sydney. It is of terrestrial habits, living entirely on the floors of the forest or scrub.

A nest I found in the Big Scrub, Richmond River, which I believe belonged to the Orthonyx, or Log Runner, was in a damp situation between the spurs of a tree in thick scrub. It was evidently in the course of construction, and was composed entirely of fresh moss, and, as originally described by Verreaux, the entrance was on a level with the surface of the ground.



NEST OF THE SPINE-TAILED LOG-RUNNER (ORTHONYX)

From a Photo by S. W. Jackson.

Although nests were obtained by Dr. Ramsay's collectors in the Richmond River scrubs, in 1865-6, the Doctor did not describe the eggs till twenty years afterwards.

For the pair of eggs in my collection I am indebted to the indomitable scrub hunter, Mr. W. T. Bailey, who took a nest near Pimpama Creek, Queensland, 17th August, 1890.

The Spine-tailed *Orthonyx* would appear to have two laying seasons, principally the months July and August, and again February and March. However, eggs have been found during other months, because Mr. H. R. Elvery informs me he has taken eggs in January, April, May and June. But as Mr. Elvery has been very assiduous in his attentions to Log Runners in his locality, possibly some of the birds may have laid again, on account of their previous eggs having been robbed. On one occasion Mr. Elvery found a Log Runner's nest in a clump of lawyer canes, about six feet from the ground—a rather unusual place for the site of this bird's nest.

A capital illustration of a Log Runner's nest is given from a photograph by Mr. S. W. Jackson.

When Mr. Jackson and his party visited the Bullabuloh cedar scrubs, seventy miles from South Grafton, in October, 1898, upwards of twenty nests were examined, but the majority were old. However, some contained eggs, several sets being perfectly fresh, notwithstanding the lateness of the season for this bird. The nests, which were beautiful structures of mostly green moss, were found in a variety of situations—some at the foot of trees, neatly concealed between the roots, others built in long grass in the scrub, others again against an old log or under a fern, &c., &c.

205.—*ORTHONYX SPALDINGI*, Ramsay.

BLACK-HEADED LOG RUNNER.

Figure.—Gould: Birds of Australia, fol., supp., pl. 53.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 331.

Previous Description of Eggs.—North: Aus. Mus. Cat., app (1890).

Geographical Distribution.—North Queensland.

Nest.—Large, dome-shaped, with side entrance; loosely constructed of sticks, roots, &c.; lined inside with mosses; placed at the base of a tree, usually in a gully or depression in the scrub, but occasionally situated on the top of an elk-horn fern (*Platynerium grande*) some distance from the ground.

Eggs.—Clutch, one; long oval or elliptical in shape; texture of shell fine; surface glossy, and in some instances slightly uneven about the larger end; colour, pure white. Somewhat large compared with the size of the bird. Dimensions in inches of single examples: (1) 1.4 × .95, (2) 1.38 × .98.

Observations.—This is the larger and northern representative of the Log Runner of more southern scrubs, from which it differs in respect to its nidification on two points: firstly, it frequently builds its nest off the ground, and secondly, lays but a single egg.

The species is peculiar to the districts between Cardwell and Cooktown, and was named by Dr. Ramsay in honour of Mr. Edward Spalding, taxidermist and collector.

According to the "Records" of the Australian Museum, Mr. Cairn one of the collectors of that excellent institution, found several nests of the Black-headed Log Runner, placed in the tangled roots of lawyer canes. One nest found 20th June, 1889, contained a single egg in an advanced state of incubation. Others were found in the middle of August. Therefore, the *Orthonyx* would appear to be a winter breeder. Mr. North suggests it is from May till end of September, young birds having been procured in June, but the breeding season is greatly influenced by the rains.

Mr. Broadbent, who has observed the Black-headed Log Runner at home in its native scrubs, observes it is exceedingly noisy and is one of the first birds heard in the morning; it is also, in a degree, a mimic. He met with troupes of sometimes thirty or more in the winter. The male birds are extremely pugnacious, a trait that frequently costs them their lives, for when engaged in battle it is an easy matter to approach close to them and thus get a successful shot.

Mr. Broadbent describes a nest he found built amongst lawyer canes, which somewhat resembled the nest of the Lyre Bird (*Menura*), in having sticks laid lengthways as an approach to the entrance. The nest was large and loosely put together.

In the account of his trip to Northern Queensland, November, 1893, published in the "Victorian Naturalist," Mr. Dudley Le Souëf records:—"Near the top of the ranges we secured a Spalding's *Orthonyx*, and were fortunate in finding its nest and one white egg." A photograph he took of the nest gives a good idea of its position. On a subsequent trip he observed several unfinished nests either built on the ground or on a rock against some object. They were lined plentifully with moss.

I have unfortunately mislaid the dates of the two specimens in my collection, but both those in Mr. D. Le Souëf's collection were taken during the month of November.

206.—*CINCLOSOMA PUNCTATUM*, Latham.—(271)

SPOTTED GROUND BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 4.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 332.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 434 (1865); North: Austr. Mus. Cat., p. 152, pl. 11, fig. 10 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia and Tasmania.



NEST OF THE SPOTTED GROUND BIRD

From a Photo by the Author.

Nest.—Open or cup-shaped; somewhat loosely constructed of strips of hard grey outer bark, dead leaves, and sometimes grass; lined inside with finer materials—bark, grass, &c.; placed on the ground in a depression or hollow, sheltered by a stump, fallen branch, stone or tussock, in forest country. Dimensions over all, 4 to 5 inches by 3 inches in depth; egg cavity, 3 inches across by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, two usually, three occasionally; oval or lengthened in form; texture somewhat fine; surface glossy; colour, dull-white, spotted and blotched with olive or umber and light or dull-grey, the markings being usually thickest at the larger end. Dimensions in inches of a lengthened pair: (1) $1.48 \times .95$, (2) $1.44 \times .93$; of an oval pair: (1) $1.29 \times .93$, (2) $1.27 \times .92$. (Plate 10.)

Observations.—As the name Ground Thrush or rather Ground Bird implies, the species is entirely of terrestrial habits, running over the ground quickly, and rising when forced to fly, with the whirr of a quail or pigeon. However, I have seen it perched on thick limbs of trees above forty feet from the ground. The Ground Bird has a peculiar whining or whistling note.

It inhabits the forest country, heavy and open alike, from South Queensland to South Australia and including Tasmania.

One nest I saw in the open, of which I give an illustration, was placed at the base of a tall sapling, where it was artfully concealed by dead twiggy branches. Dr. C. Ryan and I were spending a pleasant afternoon (31st October, 1896,) in the scrub at Mitcham, when we flushed the bird from her pair of pretty eggs. Another nest which I found the same month, two seasons afterwards, was on a rise between the bases of saplings. The nest was in a deep depression, and semi-hooded by a short tuft of grass being bent over it. The bird did not flush, but quietly rose and ran away like a Quail.

Mr. Hermann Lau tells a pleasant little incident in connection with the Spotted Ground Bird. He says:—"On my way from Tenterfield (New South Wales) to Warwick (Queensland), in the month of December, 1863, my dog (a pointer) flushed such a bird from, I believe, a resting log, and when examining the spot, I found its nest on the ground close to the log, containing two beautiful eggs in an advanced state of incubation. The nest was loosely framed of dry grass."

Mr. A. E. Brent once found in Tasmania a nest of this Ground Bird on the bare sand in an open cave. He was good enough to send me a remarkable clutch of five eggs, two of which were nearly white, with a few obsolete markings about the top. He either killed or captured the bird on the nest at Austin's Ferry, 15th September, 1883. He further states he has several times taken a nest containing four eggs. I have never previously heard of four eggs to a clutch of this species in any locality.

The season commences with the early breeders in August or September, finishing with the late ones in December or January. Between these extreme dates probably two broods are reared.

207.—CINCLOSOMA CASTANONOTUM, Gould.—(272)**CHESTNUT-BACKED GROUND BIRD.**

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 5.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 333.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882); Stirling-Lietz: Trans. Roy. Soc., S.A., vol. xvi., p. 158 (1893.)

Geographical Distribution.—New South Wales, Victoria, South, West, and North-west Australia.

Nest.—Similar to that constructed by *C. punctatum*.

Eggs.—Clutch, two; inclined to oval in shape; texture somewhat fine; surface glossy; colour, greyish-white, either finely spotted or blotched all over, thickest on the apex, with umber and dull-slate or grey. Dimensions in inches of a proper pair: (1) 1.25 × .89, (2) 1.24 × .89.

Observations.—Those persons who have endeavoured to collect this bird have found it naturally a shy and wary species.

Gould first procured it in the belts of Murray scrub in South Australia. Birds and eggs have been obtained in the Wimmera district of Victoria (where I have myself flushed the birds in the mallee), possibly about the eastern limits of its habitat, which on the other hand stretches through Central to North-west Australia, where several birds were shot near the fatal Separation Well during the journey of the Calvert Expedition.

208.—CINCLOSOMA CINNAMOMEUM, Gould.—(273)**CINNAMON-COLOURED GROUND BIRD.**

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 6.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 334.

Geographical Distribution.—Interiors of Queensland, New South Wales, Victoria (?), South, West and North-west Australia.

Nest.—A slight hollow in the ground, lined with a few leaves, &c., and usually under a low bush.

Eggs.—Clutch, two; inclined to oval in shape; texture of shell fine; surface glossy; colour, light brownish-grey, largely blotched and marked all over, chiefly longitudinally, with umber or olive-brown and dull-grey. Dimensions in inches of a clutch: (1) 1.1 × .8, (2) 1.09 × .79.

Observations.—The Cinnamon-coloured Ground Bird is considerably smaller than either the Spotted or the Chestnut-back species, and may be easily recognised by the cinnamon colouring of the greater portion of its plumage.

It is a dweller chiefly of the great interior, and was first discovered as Gould has stated, by the explorer, Captain Sturt, who obtained a single specimen during his lengthened sojourn at the Depot, a sterile and inhospitable region. Since, many other examples have been collected.

The first reported specimens of eggs of this species were, many years ago, in the collection of Dr. E. D'Ombraïn, and were collected in the interior by his cousin, Mr. A. A. D'Ombraïn.

In 1887 I received a similar pair of eggs from Cooper's Creek, at least, I believe them to be referable to the Cinnamon-coloured Ground Bird, because they agree with examples in the collection of Mr. G. A. Keartland, who received his from Central Australia, where, during the progress of the Horn Expedition, he observed the birds running over the brown sand or stony ground. On account of the assimilation of the birds' colour to their surroundings, they were not easily seen until closely approached. The birds appear to live entirely on the ground, over which they run rapidly.

Mr. Keartland's observations during the Calvert Expedition are:—"These birds delight in rough stony country, and were numerous around our camp at the camel depot. They lie concealed under low bushes until approached within a few yards, when they fly off to other shelter. They were never seen to perch. Several of their nests were found on the ground under low bushes. In each case the bird had scraped a slight hollow, and lined it with a few acacia leaves. The nest was so loosely made that it fell to pieces on being lifted. The clutch consisted of two eggs of a dirty-white ground-colour, heavily blotched with umber-brown and slaty-grey."

209.—CINCLOSOMA CASTANEOTHORAX, Gould.—(274)

CHESTNUT-BREADED GROUND BIRD.

Figure.—Gould's Birds of Australia, fol., supp., pl. 32

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 335.

Geographical Distribution.—South Queensland and towards interior provinces.

Nest and Eggs.—Undescribed.

Observations.—For the knowledge of the richly-coloured Chestnut-breasted Ground Bird, Gould was indebted to his brother-in-law, Mr. Charles Coxen, of Brisbane, who first discovered this very distinct species in the scrub growing on the tableland northward of the Darling Downs.

210.—*CINCLOSOMA MARGINATUM*, Sharpe.**NORTHERN OR BLACK-VENTED GROUND BIRD.**

Reference.—Cat. Birds Brit. Mus., vol. vii, p. 336.

Geographical Distribution.—North-west Australia.

Nest and Eggs.—Undescribed.

Observations.—According to Dr. Sharpe, this species comes nearest to *C. castaneothorax*, which it replaces in North-west Australia.

211.—*PYCNOPTILUS FLOCCOSUS*, Gould.—(207)**PILOT BIRD.**

Figure.—Gould: Birds of Australia, fol., supp., pl. 27.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 342.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882); also Nests and Eggs, Austr. Birds, pl. 1, fig. 207 (1883); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i, 2nd series, p. 1139, pl. 20 (1886); North: Austr. Mus. Cat., pl. 9, fig. 6 (1889).

Geographical Distribution.—New South Wales and Victoria.

Nest.—Oval or roundish in shape, with a side entrance; composed outwardly of portions of dead fronds, long wire-like roots (chiefly of ferns), and broad leaves, somewhat loosely put together; lined inside with fine bark or grass, then warmly with feathers. Altogether not unlike, in miniature, the nest of a Lyre Bird (*Menura*). Usually placed on or near the ground amongst ferns, sword-grass, or in forest débris. The entrance has a little arch, also a landing-place. Dimensions: outside circumference 20 inches, or 7 inches in length by 6 inches across; inside diameter (*i.e.*, from entrance to back wall) 3 inches; entrance about $1\frac{1}{2}$ inches across.

Eggs.—Clutch, two to three; roundish oval in form; texture of shell fine; surface very glossy; colour, nearly a uniform fuscous or dark purplish-brown tint, except on the apex, which is of a still darker shade; also, around the upper quarter and below the darker shade is a curious indistinct belt of very fine crack-like, whitish rings. Dimensions in inches of a proper pair: (1) $1.06 \times .76$, (2) $1.05 \times .77$. (Plate 11.)

Observations.—There was some mystery about the habitat of this bird when it was first revealed to science by Gould. It was supposed to come from the interior of New South Wales. It is true that the Pilot Bird is found in New South Wales, but in the forested tracts

near the coast, and not further inland than the Blue Mountains. It is also a fairly common bird in the mountainous and in the heavy forested districts of Victoria, where it is, I think, not found further west than the Cape Otway forest, if found there at all.

As there have been no little "heart-burnings" about the first discovery and the first description of the eggs of this most interesting and unique forest bird, I shall endeavour to give the actual history.

Undoubtedly the first authenticated finds came under the notice of my friend and valued correspondent Mr. Percy Seymour. I here quote his own communication:—"My specimens of *Pycnoptilus fluccosus* were taken in the parish of Buln-Buln, South Gippsland, when I was surveying it in 1874. The first was brought to me by some of the scrub-cutters on the 26th November, in a nest which also contained a second egg broken and containing an embryo. The other was sound and contained no embryo, so I had no difficulty, but I cracked it afterwards. It is very dark-brown in colour, and the broken one resembled it but had a darker zone round one end. The shell is extremely fragile. The nest was built on the ground under a tussock of sword-grass, and originally contained three eggs (at least so the scrub-cutters said).

"On the 2nd December I found a second nest on the ground on a sloping hill side. It was evidently deserted and contained only one egg, from which the colour had faded, leaving it a greyish tint. The scrub-cutters found a third nest under a tussock containing three young birds. The parents flew about and gave me a good opportunity of observing them, for the scrub cutters did not remove the nest but pointed it out to me. The nests were domed, with the entrance at the side, and loosely built externally of grass, fibrous roots, and fragments of sword grass. Within was a close layer composed principally of dried grass, and lined copiously with soft dark feathers."

About 1878 Mr. A. J. North took specimens in Gippsland and kindly presented me with one, which, together with another I received from the Fernshawe district, was described in the "Southern Science Record," 1882, vol. ii., p. 130.

Four years subsequently Dr. Ramsay writes (*vide* Proc. Linn. Soc., New South Wales, 2nd ser., vol. i., p. 1139):—"This species has hitherto been considered a scarce bird in New South Wales, prior to which it had only been recorded from our more southern provinces. Our taxidermist, Mr. J. A. Thorpe, procured some beautiful specimens in the flesh at Cambewarra, about one hundred miles south of Port Jackson; and Mr. Yardley, of that district, has forwarded quite recently the nest and eggs taken by Mr. Sinclair, a timber-getter, working in the adjacent scrubs. The nest, I am informed, was placed on or very near the ground among some débris on a bank or slope; it is a rather loose structure, built of shreds of bark chiefly, and lined with feathers of various kinds, among which may be distinguished those of the Lyre Bird, Cat Bird, and some of the *Pycnoptilus* itself. In form it is somewhat dome-shaped, placed on its side, and with a large, rough, ill-defined opening, which was probably narrowed by the adjacent débris among which it was placed. The eggs, two in

number for a sitting, are in tint of a dark, rich, purplish-brown, like those of *Sericornis citreogularis*, with an indistinct zone at the larger end of a blackish tint, and a few ill-defined obsolete spots of the same on the other parts; they are smaller and more dot-like nearer the thin end, where the ground-colour is slightly lighter in tint; they measure as follows:—(A) 1×0.75 inch, (B) 0.95×0.75 inch. They are decidedly swollen and much shorter in proportion, but otherwise very like the dark variety of the eggs of *Sericornis citreogularis*. Mr. A. J. North, who took a nest of this species so far back as October, 1878, at Childers, in South Gippsland, and exhibited the first specimen I had seen, at the International Exhibition held in Melbourne, 1880, informs me that this species was very plentiful in that district up to 1881, but the numerous clearings made by the 'selectors' have since driven the bird to other parts. The egg, he states, shows no difference from those here described, except that some are slightly longer, but not so swollen as others."

The first Pilot Bird's nest I found, and yet did not find, was at Christmas, 1888. I was walking down a dry bed of a gully in the Dandenongs when a bird flew out of some débris. As it was late in the season, and thinking it was only débris from whence the bird flew, I passed on. A friend coming down the track the day following saw a bird fly from the same spot. Looking into it he observed it was a nest containing a pair of eggs.

However, my first actual find of a *Pyenoptilus*' nest occurred under the most pleasant and most agreeable of circumstances. On 26th January, 1893, Foundation Day (which I have called "All Natives' Day"), Mrs. Campbell and I took the opportunity of exploring a romantic fern gully on the property of Mr. John Griffiths, in the Dandenongs. We were camped for luncheon. A bird up gully sounded two or three notes resembling the words "guinea a week," which were answered in sweet piercing notes by a bird immediately behind us. We took but casual notice of these pleasant bird calls, but later on, when the notes were repeated again and again, my curiosity was aroused. Looking through the ferns behind I saw a *Pyenoptilus* preening its feathers, and further search led to the finding of its nest, containing a pair of eggs, in a patch of asplenium ferns not four feet from where we sat. While watching the bird I observed a bush rat sneaking down behind, therefore I thought it would be as well for me to annex the eggs instead of letting them remain to be demolished by such vermin.

I proceeded to photograph the nest (see illustration), which the bird did not object to, but when I put my fingers in to remove the eggs the distress of the poor thing was pitiful. She flew on to the nest and endeavoured pluckily to defend it. I could easily have knocked the bird down, but the nest and eggs were a prize good enough. The nest was warmly lined with feathers, in which I detected Lyre Birds', and was situated among the fronds of the fern a few inches off the ground, the entrance facing down hill. I should have stated that the eggs were far incubated.

Mr. J. A. Kershaw took a pair of fresh eggs about the middle of October, 1886, in Gippsland. Therefore it would appear that the breeding season for the Pilot Bird may be included in the months from October to January.

212.—*DRYMAEDES BRUNNEOPYGIUS*, Gould.—(173)

SCRUB ROBIN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 10.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 343.

Previous Description of Eggs.—Campbell: Victorian Naturalist, vol. xv., p. 130.

Geographical Distribution.—New South Wales, Victoria and South Australia.

Nest.—Cup-shaped, somewhat loosely constructed; composed of strips of bark outwardly protected by twigs, and lined inside with grass and a few rootlets; situated in a slight hollow scraped in the ground, in thick wattle (acacia) scrub. Dimensions over all, 7 to 8 inches; egg cavity, 3 inches across by 2 inches deep.

Eggs.—Clutch, one, probably two sometimes; stout oval in shape; texture of shell fine; surface glossy; colour, light greenish-grey or dull greenish-white, spotted and blotched (in confluent patches round the apex) with cinnamon-brown and slate. Dimensions in inches: (1) $\cdot98 \times \cdot74$, (2) $\cdot92 \times \cdot7$.

Observations.—There are two or three species of these rare Robins in Australia, which, on account of the lengthened legs, would appear to spend much of their time upon the ground. Therefore it seems to me that "Ground Robin" would have been a more appropriate vernacular name than Scrub Robin.

With reference to the finding of the first Scrub Robin, Gould writes:—"I discovered this singular bird in the great Murray scrubs, where it was tolerably abundant; I have never seen it from any other part of the country, and it is doubtless confined to such portions of Australia as are clothed with a similar character of vegetation. It is a quiet and inactive species, resorting much to the ground, over which and among the underwood it passes with great ease; it appeared rarely to take wing, but to depend for its security upon its dexterity in hopping away to the more scrubby parts. I have occasionally observed it mount to the most elevated portion of a low bush, and there pour forth a sharp, monotonous whistling note, not very unlike that of some of the *Pachycephaline*; indeed, it was its note that first attracted my attention to it. When on the ground, and occasionally when perched on a twig, it elevates its tail considerably, but not to the extent of the *Maluri*."

In my manual, "Nests and Eggs" (1883), I furnished a description of an egg supposed to belong to this Scrub or Ground Robin. I entertain doubts now as to its parentage, more especially as Mr. C. French, jun., has lately received an authenticated specimen from Mr. J. C. Goudie, Birchip.

In October, 1898, my son Archie procured a pair of skins of this rare Robin in the North-west province of Victoria, where the bird appears partial to the acacia scrubs. Early in November the same season, and in the same district, Mr. Goudie found one of their nests containing a young bird newly hatched, and on the 10th January following was fortunate in finding another nest containing a single egg.

During a pleasant camp-out with two young companions (Messrs. Smart) in the Mallee, September, 1899, I had the good fortune to examine a nest and secure an egg of this rare Robin. The nest was discovered by Mr. A. Smart, who was attracted to the spot by the antics (hopping about with quivering wings half-extended) of one of the parent birds. The rim of the nest was flush with the surface of the ground, strewn with dead leaves, sticks, &c., and was situated in the centre of a clump of Mallee saplings that had grown up evidently after a farmer's "Mallee roller" had cleared the original scrub. The egg cavity, which was three inches across by two inches deep, and lined with fine pieces of bark and grass, was protected by dry dead sticks like miniature logs (two inches in diameter and three or four inches long), fixed round about. The nest, although in Mallee, was near a strip of acacia scrub, only about a mile from the township of Nhill.

It was thought that this species extended to West Australia, but it is apparently represented there by a variety which Dr. Sharpe has called *Drymaedes pallidus*.

213.—DRYMAEDES PALLIDUS, Sharpe.

PALE SCRUB ROBIN.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 344.

Geographical Distribution.—West Australia.

Nest and Eggs.—Undescribed.

Observations.—Dr. Sharpe remarks that this Scrub Robin apparently represents the common species in Western (? North-west) Australia.

214.—DRYMAEDES SUPERCILLARIS, Gould.—(174)

EASTERN SCRUB ROBIN.

Figure.—Gould: Birds of Australia, fol., supp., pl. 16.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 344.

Previous Description of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 291 (1865).

Geographical Distribution.—Northern Territory and North Queensland.

Nest.—Cup-shaped, outwardly composed of small sticks, with finer ones inside, and lined with grass-like fibres; usually placed on the ground near the foot of a tree, the nest being surrounded with dead leaves heaped up to the level of the rim. Dimensions across the egg cavity $4\frac{1}{2}$ inches (Gould).

Eggs.—Clutch, two; regular oval in shape, and of a very light stone-grey; thickly covered with small umber blotches, which increase in size and are more thickly placed on the larger end. Dimensions in inches: $1.0 \times .7$ (Gould).

Observations.—The Eastern Scrub Robin has, up to the present, not been discovered out of the Cape York and Gulf of Carpentaria districts.

Gould records: "Perhaps one of the most interesting birds discovered by me in the brushes of South Australia was a species of this form, to which I gave the name of *Drymaedes brunneopygia*; this second species of the genus is an inhabitant of the north-east coast." That author then quotes from Macgillivray's notes, from which I have culled the description of the nest and eggs of the eastern bird.

Macgillivray found the nest on the 17th November, 1849, about five or six miles inland from Cape York, whilst traversing a thin open scrub of small saplings growing in a stony ground thickly covered with dead leaves. The two eggs were placed side by side, with the large end of one opposite the small end of the other. After watching the nest for some time, one of the owners appeared and was shot.

The poor bird, with sudden jerks over the ground, hopped up quite close to the observer, and so met its doom in the interests of science, its skin becoming the type of a new species.

Nearly fifty years have elapsed since John Macgillivray found the original nest, and up to the present a second one has not been taken, or if so, it has not been recorded.

215.—HYLACOLA PYRRHOPYGIA, Vigors and Horsfield.—(205)

CHESTNUT-RUMPED GROUND WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 39.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 346.

Previous Descriptions of Eggs—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. ii., p. 108 (1878); Campbell: Southern Science Record, (1883).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South and West Australia.

Nest.—A loose structure, composed of narrow strips of bark, grasses, and rootlets (which can be scarcely said to be interwoven), and with which it is chiefly lined, with the addition of a few feathers. It is

dome-shaped in form, and a little larger than that of *Malurus lamberti*, and usually hidden at the base of a clump of bushes and grass, or in some bushy scrub near the ground, sometimes resting on the ground, and at all times very difficult to find (Ramsay).

Eggs.—Clutch, three; inclined to oval in shape; texture of shell fine; surface glossy; colour, light purplish-buff, moderately and finely spotted with umber, the markings being thickest and in the form of a small belt round the apex. Most resemble those of Large-billed Scrub Tit (*Sericornis magnirostris*). Dimensions in inches of a pair: (1) $\cdot 78 \times \cdot 57$, (2) $\cdot 77 \times \cdot 56$.

Observations.—This rare Ground Wren is a lover chiefly of such dry scrubby tracts as are suitable to its habits in Eastern Australia. It is also said to be found in the west.

Of its nidification Gould had nothing to communicate, its nest not having been discovered either by himself or by any of his party.

Dr. Ramsay, however, first found them breeding at Dobroyde, near Sydney, as far back as 1860, when he procured both adults and young.

Mr. W. White (South Australia), kindly sent me the following data with two eggs:—" *Hylacola pyrrhopygia*.—Kangaroo Island.—Domed nest, flat top, rather rough, composed of grass and fine twigs, projecting hole near the top, placed in a thick prickly acacia growing in a gully; date October, 1893.—A. and W. White."

216.—HYLACOLA CAUTA, Gould.—(206)

RUFOUS-RUMPED GROUND WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 40.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 347.

Previous Description of Eggs.—Campbell: Geelong Naturalist (1898).

Geographical Distribution.—Victoria and South Australia (including Kangaroo Island).

Nest.—Resembles that of the other species—*H. pyrrhopygia*—dome-shaped side entrance; loosely composed of grasses, rootlets, &c., and placed close to the ground in a scrubby bush.

Eggs.—Clutch, three; nearly oval in shape; texture of shell fine; surface slightly glossy; colour, chocolate or purplish-brown, lighter in shade on the smaller end, but with a ring, in some instances a patch, of indistinct and darker-coloured markings about the larger end. Not unlike those of the Red Throat (*Pyrrholœmus*), but proportionally larger. Dimensions in inches of a proper clutch: (1) $\cdot 86 \times \cdot 61$, (2) $\cdot 85 \times \cdot 62$, (3) $\cdot 84 \times \cdot 62$. (Plate 11.)

Observations.—The cautious *Hylacola* or Rufous-rumped Ground Wren, as far as we are at present aware, has only been found in the drier tracts of Victoria and South Australia.

I believe the late Mr. R. H. Nancarrow was the first to discover this rare nest. Writing to the Field Naturalists' Club of Victoria, March, 1888, he stated:—"About twenty years ago I used to do a good deal of nest-hunting in the Whipstick, an isolated tract of Mallee scrub, commencing near the municipal boundary of Eaglehawk (Victoria), and extending in a northerly direction for more than twenty miles, by a breadth, in some parts, of five or six miles. In and around the scrub I met with several species of birds, respecting the nidification of which Gould's recently-published handbook furnished little or no information. To search for their nests was, therefore, a very pleasurable task.

"Of the *Hylacola* I obtained only one nest containing eggs, and I sent the nest and an egg to the National Museum, and there they are still, no doubt, stowed away somewhere along with hundreds of other valuable things that cannot be displayed for want of space."

I have recently received from Mr. H. E. Hill a bird from the Bendigo district which is apparently *H. pyrrhopygia*, and which would appear to throw doubt on the identification of Mr. Nancarrow's species. Both birds possess the chestnut-coloured rump or upper tail coverts, and more than one naturalist has confounded the birds. The *H. cauta* is slightly the smaller bird, having a brighter (rufous-brown) colouring on the rump. I have myself watched these birds in the Mallee. They hop about in pairs over the ground and through the under scrub like *Maluri*, the rich, red rump being very conspicuous. The only notes I heard uttered were feeble and hissing. Probably the birds have some song as well.

The eggs I have described were a clutch taken on Kangaroo Island, 14th October, 1895, by Mr. W. White, of Adelaide.

217.—PSOPHODES CREPITANS, Latham.—(182)

COACH-WHIP BIRD.

Figure.—Gould. Birds of Australia, fol., vol. iii., pl. 15.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 350

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 314 (1865); North: Austr. Mus. Cat., p. 73, pl. 8, fig. 7 (1889); Le Souëf: Proc. Roy. Soc., Vict., vol. vii., new ser., p. 21 (1895).

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest.—Open, somewhat loosely constructed of twigs, apparently broken off by the birds; lined inside with dark, iron-coloured, wire-like rootlets, sometimes with fine rush-like grass, and usually situated about

three feet from the ground in thick scrub or undergrowth. Dimensions over all, 6 to 8 inches by 3 to 4 inches in depth; egg cavity, 3 inches across by 2 inches deep.

Eggs.—Clutch, two, three rarely; stout oval in shape; texture of shell fine; surface slightly glossy; colour, light bluish or greenish-white, moderately blotched and marked with sepia and light-grey. Some of the markings are curious, taking the form of ancient hieroglyphics. Dimensions of a proper clutch: (1) $1.09 \times .79$, (2) $1.07 \times .78$; another clutch which has one egg unusually round and entirely devoid of markings: (1) $1.07 \times .77$, (2) $1.02 \times .81$. (Plate 11.)

A pair taken in Northern Queensland has a somewhat lighter shade of bluish-white with pronounced roundish, black blotches and grey markings, the hieroglyphic-like markings being absent: (1) $1.11 \times .76$. (2) $1.1 \times .77$.

Observations.—The crack of the Coach-whip Bird may be heard in almost every scrub or tangled undergrowth through the length of Eastern Australia. The total length of the bird is about 10 inches, including a tail about half that length, which is partly elevated and expanded when the bird is animated. The general colour is dark olive-green, almost approaching black, with a conspicuous large patch of white on each side of the neck; bill black, with eyes and feet reddish-brown. There are some loose dark feathers on the head which, when raised, give the wearer a sprightly appearance. The birds are tolerably plentiful in Gippsland. Judging by the number of calls heard in all parts of the Big Scrub, in the Richmond River district (New South Wales), I should say nowhere are the Coach-whips more plentiful, while I heard a few cracks in that romantic locality, Dalrymple's Gap, near Cardwell. Still further north, in the Bloomfield River district, in the thick scrub well up in the mountains, Mr. Dudley Le Souëf on two or three occasions heard the call of the Coach-whip Bird, but he thought the note, although unmistakable, sounded slightly different to that produced by the Victorian bird.

Mr. K. Broadbent was the first collector to draw attention to the two races of this bird; the northern variety, which he found common in the mountain scrubs of the Herbert River, being always much smaller than those occurring further south—for instance, even in the scrubs near Brisbane.*

One season (October, 1881) I was encamped with a companion in a snug nook on the north shore of Lake King, Gippsland, and discovered in a thicket the nest of a Coach-whip Bird building. On my second visit it contained two beautiful eggs. To prove if they were the full clutch I left them for a day or two; returning again, my vexation can be imagined when I found the rare eggs gone. I was convinced that no

* Mr A. J. North has since named the smaller race *P. crepitans*, subsp. *lateralis*. Reference Rec. Austr. Mus., vol. iii., p. 13 (1897). Several skins in the British Museum, collected at Cape York, by Messrs. Cockerell and Thorpe, are pronounced by Dr Sharpe to be *P. crepitans*.

human being had forestalled me, and came to the conclusion that the culprits were bush rats, which abounded in that part of the country. The next nest I chanced to find building was in dense scrub close to Pearce's Creek, Richmond River district. The nest was a foot or two from the ground, and placed in a bunch of lawyer (*Calamus*) canes. Returning in a few days I found the nest occupied by a pair of eggs: I immediately thought of bush rats, and forthwith removed the beautiful specimens. Near the same locality I found another nest containing eggs of the usual bluish-white tint, but devoid of the characteristic markings.

The following interesting note, by A. J. B. (Metung, Victoria), appeared in "The Australasian," 16th June, 1894: "The Coach-whip Bird (*Psophodes crepitans*) cannot be classed as a rare bird, for it is found in all the gullies in South-east Gippsland and in the Bass Ranges, and no doubt in many other places where suitable food can be found. At early morn it may be seen out on the edge of the gullies, running up and down the moss-covered supplejacks, which look like giant ropes stretched from tree to tree, or upon any logs that are close by. Its favourite place is a leaning tree denuded of its limbs; on this it will play for an hour, running and dancing backward and forward at times, with its crest up, uttering the peculiar cry of the stock whip, which is finished by another bird, who calls out 'pit-wit-wee.' So smartly is this flourish given that it almost defies detection, and any casual observer would think it was done by one bird.* The nest of the Whip Bird is very hard to find, and although the birds are fairly plentiful here, I have only succeeded in getting two of their curiously-marked eggs. I have wasted many hours lying in the scrub watching a pair that I thought was building, but without success. It was whilst watching the birds that I first found out that the cry was made by two of them. Since then I have noticed it dozens of times. I do not say that one bird cannot make the note, but having often only heard them crack the whip makes me think that it wants two birds to complete the call. The Whip Bird is very shy, and rarely takes to flight, running through the scrub like a Lyre Bird, which it greatly resembles in many of its habits. After its morning's airing it buries itself in the deep shades of the myrtles, and beyond an odd call or two is heard no more until the day begins to wane."

My venerable friend, Mr. Hermann Lau, furnishes some truthful and valuable remarks concerning the Coach-whip Bird in South Queensland. He writes:—"Of all the feathered tribe which carry on a happy existence in the weeds among the thicket of everlasting green this lively customer makes itself most conspicuous with its odd shrilly note. It strikes the naturalist when he hears this sound that he is entering the threshold of sanguine expectation. Wherever dense scrub presents itself the bird is there, but such vegetation near the sea coast is its favourite haunt. Seldom a bird roves, it is always to be found

* I always thought the call notes were uttered by the same individual until one day in the ranges I crawled between a pair of birds. What appeared to be the male gave on one hand the notes ending in the crack, and they were rapidly answered on the other hand by the female in a sharp, short double whistle.

in the same locality—about a quarter-of-a-mile in circumference—where it finds its food, lives and sleeps, constantly guarded by a faithful wife, who always lets her lord know, by two rapid notes as an answer to his speaking call, that she is there. Strong in love, the male is most jealous: I saw on one occasion at Cooyar, south of the Bunya Mountains, where two males had been fighting furiously, with the result that both found their death, one lying on the top of a little bush, the other underneath on the ground.

“It is sometimes hard to find the nest in the dense undergrowth, especially if the structure is hidden amongst huge nettles, which, in most cases, spring up after the scrub has been cleared. The compact nest will be found near the ground where the many stems of small bushes unite. Rarely have I found the nest placed higher than four feet from the ground. As may be expected, the material of the nest is a conglomerate of scrub rubbish, such as decayed string-like bark; the filling-in is dark rootlets. There are two broods, October and December (?).”

Breeding months from July to December, but principally the last three months.

Young Coach-whip Birds have been known to leave their nest before being able to fly.

The illustration given of the Coach-whip Bird's nest was taken under rather disadvantageous circumstances, namely, in the blazing sun among prickly lawyer vines.

218.—*PSOPHODES NIGROGULARIS*, Gould.—(183)

BLACK-THROATED WHIP BIRD.

Figure.—Gould. *Birds of Australia*, fol., vol. iii., pl. 16.

Reference—*Cat. Birds Brit. Mus.*, vol. vii., p. 351.

Previous Description of Eggs.—North: *Victorian Naturalist*, vol. xvi., p. 11 (1899)

Geographical Distribution.—West Australia.

Nest.—Similar to that of the other Coach-whip Bird and similarly situated—low down, in scrub.

Eggs.—Clutch, two; inclined to oval in shape; texture of shell fine; surface glossy; colour, pale or delicate greenish-white, boldly but sparingly marked with sepia, almost black, and dull grey; the markings are inclined to be more numerous on the apex, and some are irregularly shaped or hieroglyphic-like. Dimensions in inches of the type clutch: (1—long oval) $1.2 \times .78$, (2—round oval) $1.05 \times .77$. Altogether these egg possesses a characteristic resemblance to those of the Eastern Coach-whip Bird, except that the ground-colour is of a lighter shade.

Observations—Gould writes:—"It is to Gilbert's perseverance that science is indebted for the knowledge of this new bird. His notes respecting it I here transcribe:—"Inhabits thickets of a small species of *Leptospermum* growing among the sand-hills which run parallel and adjacent to the beach. It utters a peculiar harsh and grating song which it is quite impossible to describe, and which is so different from that of every other bird I ever heard or am acquainted with, that I shall have no difficulty in recognising it again wherever I may hear it. I heard it for the first time, together with the notes of many other birds equally strange to me, in the vicinity of the Wongan Hills, a few weeks back, but could not then obtain a sight of the bird, although I knew that it was only a few yards from me." In closing my manuscripts, I had just penned this sentence, "The next most interesting find in connection with this western form of the Coach-whip Bird will be the discovery of its nest and eggs," when, lo! Mr. G. A. Keartland kindly placed at my disposal, for description, eggs he recently received from Western Australia, collected at Bunbury, season 1898.

219.—*SPIENOSTOMA CRISTATUM*, Gould.—(184)

WEDGE BILL.

Figure.—Gould; Birds of Australia, fol., vol. iii., pl. 17.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 74.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 316 (1865); North: Austn. Mus. Cat., p. 71, pl. 8, fig. 5 (1889)

Geographical Distribution.—Interior of Australia in general.

Nest.—Open, cup-shaped, composed of fine twigs; lined inside with grasses, and usually situated in a low bush such as polygonum.

Eggs.—Clutch, two to three; nearly true oval in shape; texture of shell fine; surface slightly glossy; colour, light bluish-green, moderately but boldly marked with small roundish spots and blotches, and sometimes with comma-like markings of dark sepia or black and grey. Dimensions in inches of a clutch: (1) 1.0 × .68, (2) 1.0 × .67. (Plate 11.)

Observations.—This little-known species is a dweller of the dreary interior wastes of Australia.

Gould described a nest of the Wedge Bill in the British Museum and the eggs from his own collection.

Dr. Ramsay kindly gave me a pair of eggs of the Wedge Bill. Subsequently I received similar specimens from the Murchison district, West Australia, and a beautiful pair from Mr. H. C. Burkitt, taken by him at Tingatingarna, Cooper's Creek, 26th March, 1887. Therefore, like the Orocoica, it would appear that the Wedge Bill sometimes lays in autumn as well as the usual season embracing the months from September to January, according to the rain.

There was a relic of the Mitchell exploring party to Central Australia, 1835, in the Dobroyde collection, in the shape of an egg of the Wedge Bill, which bird, however, was unknown to science in those days, and was not described till two years afterwards by Gould.

During the progress of the Horn Scientific Expedition in Central Australia, in the winter of 1894, a nest of the Wedge Bill was found, containing a hard set egg. Again, when with the Calvert Expedition, Mr. Keartland writes:—"This bird appears to have a very wide range in West Australia. Along the Cue road its notes were frequently heard, and birds were plentiful near Lake Way. At our camel depot on Brockman Creek, during August, I obtained a number of specimens, and on several occasions killed the pair at one shot. In three cases, males in immature plumage, with horn-coloured bills, were found mated to adult females; whilst at other times the sexes could not be distinguished without dissection. The Wedge Bill delights in open country in which low bushes of dense foliage exist. Their nests are usually placed in the latter, about three feet or less from the ground, and are built of fine twigs, cup-shaped, and lined with soft grass. Like *Oreocia cristata*, the Wedge Bill is a most accomplished ventriloquist."

Writing from Point Cloates (West Australia), Mr. Tom Carter states: "*Sphenostoma cristatum* is a common bird here and in the Gascoyne district. One is apt to confuse it with the Bell Bird *Oreocia cristata*. Both birds are fond of dense scrub, especially thick 'ming-a' and 'quarong' (both local names) bushes. The Wedge Bill is particularly wary, much more so than the Bell Bird, which is often tame. The song of the Wedge Bill is heard all day in winter and most of the rest of the year. It has a rich, metallic, ringing note repeated twelve or fifteen times without a break. I have heard bushmen describe it as 'Sweet Kitty Lintol' (strong accent on last syllable). The bird often winds up with a double metallic ringing note in addition."

220.—*POMATORHINUS TEMPORALIS*, Vigors and Horsfield.—(292)

BABBLER OR CHATTERER.

Figure—Gould: Birds of Australia, fol., vol. iv., pl. 20.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 418

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 480 (1865); Ramsay: Trans. Phil. Soc., N S. Wales (1865); North: Austr. Mus. Cat., pl. 9, fig. 7 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, and South Australia.

Nest.—Bulky, round, with semi-spouted or hooded side entrance; composed outwardly of rough sticks; lined inside with tufts (including roots) of grass, bark, wool, &c. Usually conspicuously placed at the extremity of forked branches of a low tree or in a sapling. Dimensions, circumference about 42 inches, or diameter 12 inches; internal diameter, 4 to 5 inches; entrance, about 2 inches across.

Eggs.—Clutch, four to five, occasionally larger numbers, probably combination clutches; nearly elliptical; texture of shell fine; surface glossy; colour, buffy, clouded with purplish or brownish-grey, then covered in a curious manner with hair-like interlacing lines or veins of dark-brown or umber. Dimensions in inches of a pair: (1) 1.16 × .74, (2) 1.06 × .75. (Plate 11.)

Observations.—This well-known bird enjoys a goodly range, probably over the greater part of the eastern half of Australia. The bird may be described as dark or blackish-brown in general colour of plumage, with throat, centre of breast, and a broad strip over each eye white; the tail is also largely tipped with white; crown of the head and sides of the neck greyish; bill and feet dark, the bill lighter coloured at the base; eyes straw-coloured. Total length, 10 inches, including curved and finely-pointed bill, 1¾ inches; wing and tail each 4½ inches. The bird possesses a smart active appearance and is never still.

The bulky nests are very conspicuous in the bush, several new and old ones may be seen in close proximity, often in the same tree with each other. The bird is found in almost any open forest country, flying about in small families, making all sorts of curious calls and noises, and often chattering in monosyllables among themselves when hunting for food. Sometimes a bird (male probably) makes a loud cat-like mew, repeated nine or ten times moderately fast, while its mate perched on an adjacent limb or tree answers each call with a whistle-like note. So precisely are the two kinds of notes repeated alternately, that at a distance they seem really to be produced by one bird. The bird's remarkable cries have suggested various bush names—Cat Bird, Barking Bird, Chatterer, &c.

I have very vivid recollections of the first nest I found of this species. I had some difficulty in thrusting my hand into the nest because of the stout sticks of the spouted entrance pointing against me. The sticks were thorny, too, being gathered from *Bursaria* bushes. Having withdrawn an egg, and never having seen the kind before, I endeavoured to remove the hair-like markings, thinking that some of the lining was sticking to the specimen. Gould has described the nest and curiously-marked eggs very well.

From observations I have come to the conclusion that nests are used for roosting purposes, during winter at all events. Mr. Hermann Lau, in his interesting note on the habits of this bird in Queensland, partly bears me out. He writes:—"These birds make a barking noise when climbing from branch to branch to the top of a tree. Strictly gregarious, their assemblage in most cases consists of twelve individuals. They are always to be found in Queensland on sandy soil overgrown with shrubby trees such as the wild lemon, sandal-wood, melaleuca and hakea, red eucalypts appearing amongst them like giants. These birds perform their business—feeding, nest-building, sleeping—together. The nest is a large dome-shaped edifice, and with so many helping hands, or rather bills, is constructed in a day or two: I have myself observed every bird in a flock having a dry stick and carrying it to the same nest. In this way three or four snug houses are built, one of

them serving as a dormitory wherein the whole company take their night's rest, save those busy incubating during breeding season. The formidable nest with hole inside possesses a cosy interior made up of dry grass, rootlets, and fur from different animals. Its site is about ten feet from the ground, either in a little tree or in the hanging branches of a eucalypt. I have never seen more than two eggs, although others assure me they have seen three or more. Water will remove the veined chocolate markings of the eggs."

The late Mr. G. Bateman (an old bird trapper) observed that the Babblers "go in families, breed in pairs, but all use one nest in winter."

Dr. Ramsay records:—"The number of eggs in a nest varies from five to ten. My brother, James Ramsay, informs me that he has taken no less than fourteen from one nest, and in these cases believes them to be the joint property of several birds; the usual number, however, is five."

I have taken eggs in September, October and November. The breeding season, however, may be said to include the months from August to December.

In the columns of "The Australasian," 27th June, 1896, Mr. G. E. Shepherd, Somerville, brought under notice the valuable work performed by Babblers, which he has seen persistently destroying the larvæ of the pestilent codlin moth. However, it is feared these wild and restless birds will need much encouragement to come about orchards or the habitations of man.

The illustration of the Babbler's nest is from one situated in a casuarina branch.

221.—*POMATORHINUS SUPERCILIOSUS*, Vigors and Horsfield.—(294)

WHITE-BROWED BABBLER.

Figure.—Gould: *Birds of Australia*, fol., vol. iv., pl. 22.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 419.

Previous Descriptions of Eggs.—Gould: *Birds of Australia* (1848); also Handbook, vol. i., p. 483 (1865). Ramsay: *Trans. Phil. Soc.*, N. S. Wales, with pl. (1865).

Geographical Distribution.—Australia in general.

Nest.—Similar to that of *P. temporalis*, but proportionally smaller; bulky, dome-shaped, with hooded side entrance; constructed of sticks; lined inside with such soft materials as portions of flowers, feathers, grass, bark and wool. Usually placed in a low tree or bush.

Eggs.—Clutch, three to five; stout oval; texture of shell fine; surface slightly glossy; colour, lightish grey, clouded with a dark colour and usually streaked with fine hair-like lines of dark-brown or sepia. Dimensions in inches of a pair: (1) .99 × .66, (2) .95 × .67; a smaller-sized set of three: .9 × .65 inches each. (Plate 11.)



BABBLER'S NEST

From a Photo by the Author.

Observations.—This smaller-sized Babbler has a wider distribution than the common variety, being found in both Eastern and Western Australia.

Like its larger cousin, it may be seen, even in the same locality, seven or eight in a flock hopping over the ground like rats, pulling away at the short grass or levering over lumps of bark or sticks with its beak or head. When disturbed, with spread tail and wings, these birds leap actively from branch to branch through the trees, uttering chattering noises, but not quite so loudly as the Temporal or Common Babbler.

The eggs of this species in my collection I took in the Mallee, end of October, 1884—two nests, two and three eggs respectively. The nests were lined with grass, fur and dry cattle manure.

Mr. James G. McDougall informs me he has taken the eggs of this species in South Australia, where it is in some places called the Kangaroo Bird, early in July.

Gilbert observed in Western Australia that the breeding season commences in September, and continues during the three following months. The nest is usually constructed in a dead jam-tree (species of acacia), and it often happens that three or four pairs of birds build their nests in the same clump of trees.

Like the Temporal Babbler, the White-browed uses one of its nests as a sleeping place. At mid-winter I have witnessed a troupe filing into their dormitory at dusk.

Breeding months according to the season, from May to the end of the year.

222.—POMATORHINUS RUFICEPS, Hartlaub.—(295)

CHESTNUT-CROWNED BABBLER.

Figure—Gould: Birds of Australia, fol., supp., pl. 38.

Reference.—Cat. Birds Brit Mus., vol. vii., p. 420.

Previous Description of Eggs.—Ramsay: Proc. Linn Soc., N.S. Wales, vol. vii., p. 46, pl. 3, fig. 12 (1882).

Geographical Distribution.—Interior of Queensland (probably), New South Wales, Victoria and South Australia.

Nest.—Similar to those of the other members of the genus, bulky, built of sticks; lined inside with a thick ply of grasses, including their roots, wool, and dry cattle dung. Circumference about 50 inches.

Eggs.—Clutch, four, occasionally a larger number, probably a combination clutch; nearly oval in shape; texture of shell fine; surface glossy; colour, buffy, clouded with purplish or brownish-grey, and spotted more or less round the apex with sepia, or sometimes marked with blackish hair-like markings, as seen on the eggs of the other

members of the genus. Dimensions in inches of a pair: (1) $\cdot 98 \times \cdot 69$, (2) $\cdot 97 \times \cdot 67$.

Observations.—This well-defined species of Babbler would appear to be restricted to the interior of New South Wales, Victoria, and South Australia.

I found the bird somewhat plentiful in the Moulamein district of Riverina, where it seemed entirely to take the place of *P. superciliosus*. It was somewhat early for eggs, although I searched many nests which were securely built into the close branches of pines.

The examples of eggs in my collection are, curiously enough, from a set of twelve taken from one nest on 15th May, 1887, at Cooper's Creek, where the natives call the bird "Pirrygillgillie." The nest was the usual large twiggy structure lined with wool.

223.—POMATORHINUS RUBECULUS, Gould.—(293)

RED-BREASTED BABBLER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 21.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 421.

Previous Descriptions of Eggs.—Masters: Proc. Linn. Soc., N.S. Wales, vol. ii., p. 273 (1878); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 46 (1882); Campbell: Southern Science Record (1883); Le Souëf: Victorian Naturalist, vol. xvi., p. 67 (1899).

Geographical Distribution.—West and North-west Australia, Northern Territory, Queensland, and Central Australia.

Nest.—Similar in every respect to that of *P. temporalis*, being large, dome-shaped; outwardly composed of sticks, and lined inside with soft grass, &c.

Eggs.—Clutch, three to five; inclined to oval in shape; texture of shell fine; surface glossy; colour, buffy, clouded with brownish-grey and streaked or marbled with hair-like lines of blackish-brown. Exactly similar to those of *P. temporalis*. Some sets have a rufous-brown shade. Dimensions in inches of a proper clutch: (1) $1\cdot 13 \times \cdot 7$, (2) $1\cdot 12 \times \cdot 7$, (3) $1\cdot 07 \times \cdot 71$, (4) $1\cdot 04 \times \cdot 7$.

Observations.—As Gould remarks, this bird is numerously dispersed over the northern parts of Australia, where it takes the place of *P. temporalis*, from which it differs but little either in size or colouring; its slightly smaller dimensions and the reddish hue of its breast are, however, characteristics by which it may be distinguished from the more southern bird. The Horn Scientific Expedition found the Red-breasted Pomatorhinus, or Babbler, recently (1894) in Central Australia, while the Calvert Expedition afterwards observed in West

Australia, on the Cue road, fresh eggs as early as June (1896). The same species was subsequently found on the Fitzroy River breeding in February.

With Mr. Harry Barnard I found a nest containing eggs at Coomooboolaroo, October, 1885. Notwithstanding the birds from that district have been identified by the Australian Museum authorities as *P. rubeculus*, I could find little or no difference between the bird and *P. temporalis*. If I err, I have the comfortable reflection of knowing that I have done so in very good company, for Dr. Gadow says he can find no difference between the species found at Coomooboolaroo and *P. temporalis*.

Mr. Barnard informs me that a family of these birds built a nest and "camped" in it—that they build almost any time of the year. Once he found four fledgelings together with a set of four eggs in the same nest. Eggs have been taken as early in the season as August.

The nest and eggs first described by Mr. George Masters were from Port Darwin district.

Writing from Clermont (Queensland), 2nd November, 1897, Mr. Thomas R. McDougall favours me with the following note on the Babbler:—"A family of eight or nine Chatterers—or, as they are often called, 'happy families'—have been roosting in an old nest close by my camp for a week or more now, and I have been taking particular notice of them in my spare time. They used to spend a brief time in the morning repairing the nest, and then away they would all go to their feeding ground, returning just before sundown, when they would have ten minutes or so on a tree close by and then pack themselves into the nest. This morning they are unusually industrious, and are carrying great pieces of bark, waste paper, and grass and sticks, every two or three minutes. I also noticed this morning that they were showing a very pugnacious attitude towards a pair of Blue-faced Honeyeaters that seemed determined to dispossess them of their nest."

224.—*CINCLORHAMPHUS CRURALIS*, Vigors and Horsfield.—(211 & 242)
C. cantillans, Gould.

BLACK-BREASTED SONG LARK.

Figure.—Gould: Birds of Australia, fol., vol. iii., pls. 74 and 75.

Reference.—Cat. Birds Brit, Mus, vol. iii., p. 498.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 396 (1865); Ramsay: Ibis, p. 328 (1866); Campbell: Southern Science Record (1882).

Geographical Distribution.—Australia in general.

Nest.—Open or cup-shaped, deep; constructed of dry grasses; lined inside with soft flowering parts of grass; placed in a hollow or cattle footprint in the ground, with the rim of the nest flush with the surface, and usually protected by a grass tussock. Dimensions: internal 3 inches across by 2 inches deep. Occasionally a nest is merely a hollow made in a tuft of grass.

Eggs.—Clutch, three to four; lengthened in shape or sometimes inclined to pyriform; texture of shell fine; surface glossy; colour, warm or pinkish-white, finely, occasionally indistinctly, spotted with pinkish-red and purple, the markings being thickest about the larger end. Dimensions in inches of a pair: (1) .98 × .65, (2) .96 × .67; of a shorter pair: (1) .93 × .68, (2) .92 × .67. (Plate 11.)

Observations.—*C. cantillans* of Gould is synonymous with Vigors and Horsfield's *C. cruralis*. The confusion arose no doubt through the colouration of seasonal dress and the sizes of the sexes—the Black-breasted and larger bird (nearly twice the size of its mate) being the male. Dr. Sharpe says: "As the size of the abdominal patch seems to me to vary in proportion to the amount of the remains of winter plumage I cannot believe that *C. cantillans* is really distinct."

In spring and summer, from some grass open, what lover of nature has not enjoyed to hear the "pitch-a-paddle, pitch-a-paddle" song of this Skylark, which the bird utters when soaring upwards over the fields!

The bird has been recorded from every part of Australia where collectors have been, but not from Tasmania. However, it is only a visitor, its numbers being regulated by the season, to the most southern limits of its range, where it arrives in September or October. The first of these birds I heard in Riverina one season was on the 12th September.

In the Wimmera, season 1897 (a dry one), Mr. C. McLennan saw the first Brown Song Lark 26th August. The same season Dr. W. Macgillivray reports from Coleraine:—"Saw last of the Black-breasted *Cinclorhamphus* 2nd February. They begin to go as soon as young are able to fly."

About January or February the birds after breeding retire northwards or towards the great interior, where during winter some of them may be found flitting from tree to tree or over the Mulga Scrub giving forth the same pleasant song as they did over their brooding mates nesting in some grassy glade or cultivated crop further south.

In their familiar summer haunts these birds seem scarcer than they were in former years. A keen field observer has remarked that the depasturing of stock, changing the face of the country, forces the birds elsewhere.

225.—*CINCLORHAMPHUS RUFESCENS*, Vigors and Horsfield.—(243)

RUFOUS SONG LARK.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 76.

Reference.—Cat, Birds Brit. Mus., vol. vii., p. 500.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol i., p. 398 (1865); North: Austr. Mus. Cat., p. 153 (1889).

Geographical Distribution.—Whole of Australia.

Nest.—Similar in shape to that of the preceding species, composed of dry grasses; lined inside with fine grasses, sometimes entirely with horse-hair; usually placed in a hole in the ground, sheltered by a tussock of grass or the dead foliage or a fallen limb or tree. Dimensions over all, 4 to 5 inches by 3 inches in depth; egg cavity, $2\frac{1}{2}$ inches across by 2 inches deep.

Eggs.—Clutch, three to four; round oval or are roundish in form, more pointed at one end; texture of shell fine; surface glossy; colour, beautiful, being pinkish-white boldly spotted or blotched with rich pinkish-red or reddish-chestnut and purple, the markings being thickest round or on the apex. These eggs are rounder, smaller and much richer in colouring than those of the Black-breasted Song Lark (*U. cruralis*). Dimensions in inches: oval pair (1) $\cdot88 \times \cdot62$, (2) $\cdot88 \times \cdot61$; round pair (1) $\cdot84 \times \cdot65$, (2) $\cdot8 \times \cdot63$; small clutch (1) $\cdot81 \times \cdot62$, (2) $\cdot8 \times \cdot62$, (3) $\cdot76 \times \cdot61$. (Plate 11.)

Observations.—This melodious songster, like the *U. cruralis*, is, according to the time of season, found throughout Australia and is the more common bird of the two species. In September* it is a visitor to the southern part of the Continent, where it breeds during October, November and December, when their delightful songs are most animated. While the Black-breasted or Brown Song Lark appears partial to grassy plains, the Rufous loves the grassy glades of the forest or lightly timbered country.

The coat of the Rufous Song Lark is dark-brown, with the upper tail coverts rufous; under surface pale greyish-brown; eyes hazel, bill lead-colour in summer, in winter brown; length $7\frac{1}{2}$ inches, wing $3\frac{1}{2}$ inches, tail $3\frac{1}{4}$ inches, bill $\frac{5}{8}$ inch, tarsus 1 inch.

The most beautiful set of eggs I ever found of this bird was on a Prince of Wales' birthday at what is now Murrumbena. Imagine the set of richly coloured pinkish-red eggs reposing in a neat nest low down where the green grass grew through a dead purplish-brown branch of a fallen Wattle (*Acacia*) tree.

My son Archie found a nest in the Richmond Park containing four eggs quite fresh, 12th November, 1896. In consequence of the dry season that year this Lark, as well as the other Song Lark, was more numerous than usual in Victoria. Another nest discovered the following season (on the 23rd November) in the Horticultural Gardens, Burnley, was snugly sheltered by a tuft of Kangaroo grass and was completely lined with long black horse-hair, the dark lining enhancing the beauty of the three red mottled eggs. This nest was photographed.

In February the birds commence to return northwards.

In Central Australia during winter (1894) Mr. G. A. Keartland found the Rufous Song Larks flying from bush to bush and working amongst the blossoms in a manner that at first led him to believe they were Honeyeaters. Although these birds were frequently seen, it was not often their pleasant song was heard in the interior solitudes.

* An instance—season 1896—first bird heard in Botanical Gardens, Melbourne, middle of the month. (C. F., Jr.)

Exception, as we say, proves the rule. Sometimes an odd Rufous Song Lark remains in its summer quarters. I recollect seeing one in a bush paddock near Cheltenham during the winter 1880. It was then a silent bird. Again, near the same locality, my son saw a pair and shot one of the birds, 12th June, 1897.

During mid-winter, 1899, some of these birds were breeding near Point Cloates, West Australia.

226.—CALAMANTHUS FULIGINOSUS, Vigors and Horsfield.—(237)

STRIATED FIELD WREN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 70.

Reference.—Cat. Birds Brit Mus., vol. vii., p. 501.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 388 (1865); North: Austn. Mus. Cat., p. 147 (1889).

Geographical Distribution.—New South Wales, South and West (?) Australia and Tasmania.

Nest.—Roundish in form, dome-shaped, with side entrance; outwardly constructed of dark, dead herbage, grass, leaves, etc., mixed with moss, then a good ply of fine, dead grass, lined inside with feathers, fur and hair. Usually placed on the ground or on the side of a bank, concealed in grass, rushes, or the centre of a low bush. Dimensions outwardly, 4 inches in breadth by 5 inches in length; entrance, 1½ inches across. (See illustration.)

Eggs.—Clutch, three to four; roundish in form but much pointed at one end; texture of shell fine; surface glossy; colour, vinaceous-buff with a broad belt of reddish or purplish-brown round the apex, or with an indistinct patch of that colour on the apex. Some examples are more of a purplish tone, with cloudy markings, more or less, all over the surface. Dimensions in inches of a Tasmanian clutch: (1) .83 × .64, (2) .82 × .65, (3) .81 × .62; of a pair from the mainland: (1) .82 × .6, (2) .82 × .58. (Plate 11.)

Observations.—This Wren-like bird, with its pretty warble, which seems to keep time to the movement of its erect tail, claimed my attention in Tasmania, where one nest was found on the ground in the centre of a low gorse bush.

The Field Wren may be described as a striped bird, with a greenish wash on the upper surface, while the under parts have a brownish tinge. There is a distinctive white line over each eye. Length 4½ inches, wing 2½ inches, tail 2½ inches, bill ½ inch, tarsus ⅔ inch.

Some Tasmanian collectors call the bird by the somewhat uneuphonious name of "Stink Bird," or "Stinker," because of its peculiar scent, which will cause sporting dogs sometimes to "set" the bird.

I have noticed this same species on the mainland, notably at



NEST OF THE STRIATED FIELD WREN.

From a Photo by the Author.

Mordialloc, Oakleigh, and other places in Victoria. There are also undoubted examples of this bird in the National Museum, Melbourne, taken in the same colony.

Moreover, I have no doubt that the eggs procured on Coode Island, at the mouth of the Yarra, by Mr. A. J. North, and described by him, are referable to this species, and not to *C. campestris*. I procured, through my son, birds from the precise locality, and comparing them with the Tasmanian bird, can find no difference, except that the mainland bird is a trifle smaller (as a general rule, birds of a species found on the mainland are, I find, smaller than the same species from Tasmania).

Mr. A. E. Brent has found nests of the Striated Field Wren with an admixture of seaweed in their construction, and placed just above high-water mark on the Derwent, Tasmania, a favourite locality being the railway embankment close to that river.

Presuming the Field Wren found on Coode Island is *C. fuliginosus*, Mr. North furnishes interesting details regarding it.

The bird is one of our earliest breeders. Mr. North cites an instance when eggs were taken 24th of May. On the 17th June, 1880, he himself found four nests of this species, each containing three fresh eggs. He observes, "The situation chosen for the nest is somewhat varied, sometimes being placed underneath a tuft of rank grass, but more often have I found it artfully concealed at the bottom of a low, stunted thick shrub growing in the wet and swampy ground at the mouth of the Yarra. The nest is rounded in form, composed of grasses and lined with feathers; the nests found at the mouth of the Yarra were all composed exteriorly of an aquatic weed. The bird at times sits very close. On one occasion, when the nest was built in the grass, the bird allowed itself to be trodden upon before leaving its eggs, which were in an advanced state of incubation."

Breeding months, May or June (but generally August) to December or January.

227.—*CALAMANTRUS CAMPESTRIS*, Gould.—(238)

FIELD WREN.

Figure.—Gould: *Birds of Australia*, fol., vol. iii., pl. 71.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 502.

Previous Descriptions of Eggs.—Gould: *Birds of Australia* (1848); also Handbook, vol. i., p. 390 (1865).

Geographical Distribution.—Victoria (?), South and West Australia.

Nest.—A globular structure, composed of grasses and feathers, and placed upon the ground (Gould).

Eggs.—Clutch, three to four; round oval in form; texture of shell fine; surface glossy; colour, rich or dark vinaceous-buff, deepening into rich chocolate or chestnut-brown on the apex. Dimensions in inches of a pair from Port Lincoln, South Australia: (1) .81 × .6, (2) .8 × .6 (Mr. J. W. Mellor's collection).

Observations.—As Gould points out, the Field Calamanthus, or rather Wren, is a native of Southern and Western Australia, where it inhabits the open plains and scrubby lands, such as are interspersed with tufts of coarse grass. Mr. Keartland records:—"Although the Field Calamanthus is generally found amongst coarse grass, heath, and scrub, in moist localities, it seems to thrive equally well in the dry, sandy parts of West Australia. They were frequently disturbed amongst the samphire, salt-bush, and grass near the camel depot, and morning and evening enlivened our camp with their songs, as, perched on some elevated spot, one would pour forth its daily carol. Several nests were found during August, two of them being discovered lying on small patches of bare ground, in such exposed positions as to convey the idea that they had been cast away by some passing oologist. Mr. Chas. F. Wells found another beneath the shelter of a low saltbush. All the eggs taken were of the usual colour and character."

C. campestris is much smaller than *C. fuliginosus*, and decidedly of a more rufous tint, especially on the head and basal half of the tail. Comparative dimensions in inches of both species: *C. campestris*, length, 4·6, wing 1·95, tail 1·4, bill ·45, tarsus ·7; *C. fuliginosus*, length 5·5, wing 2·37, tail 1·75, bill ·45, tarsus ·85.

228.—CALAMANTHIUS CAMPESTRIS (sub-species) ISABELLINUS, North.

DESERT WREN.

Reference.—Report Horn Scientific Exp., p. 85

Geographical Distribution.—Central Australia.

Nest and Eggs.—Undescribed.

Observations.—The Horn Scientific Expedition to Central Australia, 1894, found a desert species of the Field Wren (*C. campestris*), for which Mr. A. J. North has proposed the above sub-specific name.

Considering the numerous names of browns at his command, I venture to think Mr. North has been scarcely complimentary to his new and interesting species in the selection of the term *isabellinus*. The word has a history, and was first used in connection with dirty linen. Isabella, Infanta of Spain, and daughter of Philip II., made a vow in 1601 that she would not change her linen until her husband had taken Ostend. As that city did not fall for three years afterwards, it has been suggested that at the price of much discomfort she must have saved a goodly washing bill.

Mr. T. Carter has forwarded me a skin of a Calamanthus from the region of the North-west Cape which may possibly prove a new variety. It most resembles *C. campestris*, but is more rufous in character of colouring. The white tail tips are absent, but there are a few white feathers on the nape of the neck, which, however, may not be permanent. The whitish line over the eye is also absent. It may possibly be Mr.

North's *C. isabellinus*, which is described as having the dark streaks of the upper surface almost lost; but in the species under consideration these marks are fairly distinct.

For the North-west bird I proposed the provisional name *C. rubiginosus* or the Rusty-red Field Wren.* Dimensions in inches: length $4\frac{1}{2}$, wing 1.95, tail 1.7, bill .42, tarsus .9.

Mr. Carter informs me that at Point Cloates the bird is numerous and may be seen on the tops of bushes warbling almost at any time of the year, but it is difficult to shoot because as soon as one is approached it dives into the undergrowth and drops out of sight.

Later, Mr. Carter kindly sent me a pair (σ and f) of these birds, together with an egg. I see no reason yet to alter my provisional name. The egg—from a set of three—may be described as roundish in form, glossy, vinaceous or buff-coloured, clouded (thickest) on the apex, with rich, reddish-chestnut. Dimensions, $.7 \times .59$ inches. The nest, which was carefully concealed in a bunch of grass in dense herbage, was found 21st July, 1899.

229.—CHTHONICOLA SAGITTATA, Latham.—(239)

LITTLE FIELD WREN.

Figure.—Gould. Birds of Australia, fol., vol. iii., pl. 72.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 290.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 391 (1865); Ramsay: Proc. Linn. Soc., p. 359, with pl. (1869); North: Austr. Mus. Cat., p. 149.

Geographical Distribution.—South Queensland, New South Wales, Victoria, and South Australia.

Nest.—Dome-shaped, small side entrance; chiefly composed of dry grass and moss; lined inside with feathers, &c. Usually placed amongst herbage in a depression of the ground, so that the nest is flush with the surface and assimilates in appearance the grassy ground. Dimensions: 3 inches high, 4 inches broad, and entrance 1 inch across.

Eggs.—Clutch, three to four; round oval in form; texture of shell fine; surface glossy; colour, light or dull cochineal-red, with a darker zone of the same tint round the apex. The remarkable colour of these eggs at once distinguishes them from all other Australian species. Dimensions in inches of odd examples: (1) $.72 \times .59$, (2) $.71 \times .57$, (3) $.7 \times .57$. (Plate 10.)

Observations.—This remarkable little species, although generically distinct from the Field Wrens (*Calamanthus*), on account of the similarity of its terrestrial habits and nidification to these birds may be fitly called by the vernacular title Little Field Wren. Gould's *Chthonicola* is merely a technical term, and an awkward word for young students to

* Victorian Naturalist, vol. xvi., p. 3 (1899)

grasp. The general plumage is olive-brown, striped or spotted with black. Some of the feathers on the throat and breast are washed with yellow; eyes yellowish, bill and feet brown, abdomen white. Sexes are nearly alike in colouring.

The Little Field Wren is a stationary species, and enjoys a range from South Queensland round to South Australia.

Gould has described the position of the nest and beautiful cochineal-red coloured eggs accurately.

A prettily situated nest I once found was in an open spot, surrounded with buttercups and other yellow flowers; some of the flowering stalks were standing up through the side of the nest. The nest contained fledged young birds. Date, 2nd November, 1886.

The Little Field Wren has been recorded as a foster parent of the Fantailed Cuckoo (*U. flabelliformis*). How the Cuckoo can discover a nest so artfully hidden in the ground is a puzzle.

Mr. Hermann Lau, who found a nest, October, 1865, of the "Speckled Jack" (a local South Queensland name for *Chthonicola*), writes:—"Met this striped-breasted little chap in several places, nearly always hopping on the ground. In such situations his nest has to be looked for, and is only discovered by seeing the bird fly hastily from it, because the snug edifice is situated partly in a hole in the ground, partly in the overhanging grass; besides, there is a short lid attached to it. Dry grass filled out with feathers and hair is the composition of the nest. The beautiful brownish-red eggs, three in number, are amongst the most handsome of Australian birds' eggs."

Breeding months, September to December or January. The latest date known to me was the end of January, when a fresh set was taken by Mr. B. E. Bardwell.

230.—EPHTHIANURA ALBIFRONS, Jardine and Selby.—(231)

WHITE-FRONTED BUSH CHAT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 64.

Reference.—Cat. Birds Brit Mus., vol. vii., p. 666.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 178 (1863) id; Gould: Birds of Australia, Handbook, vol. i., p. 378 (1865); Campbell: Southern Science Record (1882); North: Austrn. Mus. Cat., pl. 13, fig. 11, (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South, West, and North-west Australia, and Tasmania.

Nest.—Cup-shaped; composed outwardly of dead stalks of plants, grass and fine rootlets; lined inside with hair—cow, horse, &c.; usually placed near the ground in the centre of a thick low bush, or in rush-like grass in open or heath-like land. Dimensions over all: 4 inches by 3 inches in depth; egg cavity, $2\frac{1}{4}$ inches across by $1\frac{1}{2}$ inches deep.



NEST OF THE LITTLE FIELD WREN.

From a Photo by the Author.

Eggs.—Clutch, three usually, four occasionally; somewhat round in form; texture of shell fine; surface slightly glossy; colour, white, sometimes with a faint pinkish blush, moderately marked with spots and round blotches, chiefly round the upper quarter, of rich or dark purplish-brown, and duller coloured markings of the same tint. Dimensions in inches of a proper clutch: (1) $\cdot 7 \times \cdot 57$, (2) $\cdot 7 \times \cdot 56$, (3) $\cdot 68 \times \cdot 56$; of a smaller-sized pair: (1) $\cdot 68 \times \cdot 54$, (2) $\cdot 68 \times \cdot 54$.

Observations.—The common Bush Chat is an exceedingly interesting and pleasing bird, enjoying a somewhat extensive habitat from South Queensland down southward and across to Western Australia, and including Tasmania. Gould and Dr. Ramsay do not include Tasmania in the habitat for the White-fronted Chat, although the former authority admits it is very common and breeds on some of the islands—probably referring to the Furneaux Group—in Bass Strait. It is somewhat strange that Gould states, "It does not inhabit Tasmania;" while it appears on Strzelecki's old list (1845) for that island, and he mentions that he was indebted to Gould for the name amongst others.

With the mention of this familiar and quaint bird there occur to me many pleasant reminiscences of bygone days, when the waste tracts of the foreshore between St. Kilda and Port Melbourne (then Sandridge), were covered with low scrub, and where we, as boys, found many nests. How cunningly the birds, feigning broken wings or legs, used to endeavour to divert our attention from the site of their nest, which was usually close to the ground in the heart of a bush!

Since, I have found them in many other localities—in the prickly acacia hedges at Cheltenham, in the low scrub on the Mallee fringe, and in the rush-like grass on the Murray plains. My very last note was a nest noticed with a fresh egg on the 5th August, 1894, while looking for Plovers' nests in some swampy ground at Wharparilla, in the Echuca district. I never found more than three eggs to a nest.

Breeding months, July to December, or the beginning of January. Mr. North has found nests containing fresh eggs at the end of March.

Mr. J. T. Gillespie, our good field worker, first brought under my notice the fact, which I recorded in 1889, that the White-fronted Bush Chat was a foster-parent of the Narrow-billed Bronze Cuckoo (*C. basalis*).

All Ephthianuras are gregarious; at times one sees them in large flocks. About the middle of April, one season (1894), Mr. C. C. Brittlebank observed an unusually large flock, which must have contained over 200 birds. Are the birds to be considered a stationary species, or are they partial migrants? On the 20th May, 1899, in the Mallee country, Mr. Chas. McLennan saw a similar flock, in which he estimated there were between 400 and 500 birds.

Mr. Henry Lidgett (Myrniong) has thoughtfully sent me a late note mentioning that many White-fronted Bush Chats were breeding during July and August among thistles, and that one nest contained the unusual complement of five eggs.

231.—*EPIPHIANURA TRICOLOR*, Gould.—(233)

TRICOLOURED BUSH CHAT.

Figure.—Gould: *Birds of Australia*, fol., vol. iii., pl. 66.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 667.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 48 (1882); Campbell: Southern Science Record (1882); North: Austn. Mus. Cat., pl. 13, fig. 12 (1889).

Geographical Distribution.—Australia in general.

Nest.—Cup-shaped; somewhat lightly constructed of portions of dry grass with a few fine twigs added; lined inside sparingly with yellowish rootlets and a few long horse-hairs. Usually placed in a low shrub on saltbush, etc., plains, where the birds sometimes nest in small colonies and in company with the Orange-fronted Chat (*E. aurifrons*). Dimensions over all, $3\frac{1}{2}$ inches by 2 inches in depth; egg cavity, 2 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three to four; inclining to a short oval in form; texture of shell fine, surface slightly glossy; colour white, sparingly but distinctly spotted with reddish-brown and purplish-brown. These eggs are usually smaller and less numerously marked than those of the other two varieties described. Dimensions in inches of a proper clutch: (1) $\cdot68 \times \cdot5$, (2) $\cdot65 \times \cdot49$, (3) $\cdot62 \times \cdot48$.

Observations.—The Tricoloured Ephthianura or Bush Chat is one of the most beautiful birds of the inland provinces, more especially of the great interior. It is found at seasons right across the Continent, as 1 some years ago received a specimen from Mr. Tom Carter, shot by him near the North-west Cape. Subsequently they were observed by the Calvert Expedition in the North-west desert, even in the driest parts. Singularly enough one season a flock of Tricoloured Chats appeared on the Yarra flats near Healesville, where they were observed by Mr. Lindsay Clark.

In 1856, at Cape Otway, Mr. H. W. Ford, F.G.S., saw a flock of *E. tricolor* coming from eastward, appearing tired. They settled on a tree, and he (then a boy) endeavoured to knock one down with a stick to examine what was to him a new bird.

Quoting Mr. Angas, a correspondent, Gould says, "A nest and eggs of the Tricoloured Ephthianura were taken on the 27th October, 1862, in a low bush at Evandale, about three miles from Collingrove, Angaston, South Australia." It does not appear that this nest and eggs were ever described, leaving it to Dr. Ramsay and myself almost simultaneously to describe the eggs of this species twenty years afterwards. Mr. Price Fletcher, the "Bush Naturalist" of the "Queenslander," in the issue of the 30th November, 1878, gives an interesting account of Ephthianuras, especially of the Tricoloured, from his own field observations in the far interior.

Mr. Fletcher says, "There is only one other species of these birds known, that is the rare and extremely beautiful *E. tricolor*. The

great Gould never saw but one specimen,* and it is seldom seen by the general traveller, it is so essentially a bird of the interior. It is the bird gem of the desert (its elegant shape, its lively manners, its beautiful-coloured scarlet, brown and white plumage making such a striking contrast, that its name of *tricolor* is at once seen to be most appropriate). 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 squatter—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, birds in the whole country. Great was my pleasure when I found that almost every salt-bush 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 civilisation."

The late Mr. Gregory Bateman, a trapper who had observed many nests both of the Tricoloured and Orange-fronted Chats, informed me, with regard to the former bird, that on one occasion he found on a plain, within a radius of twenty yards, three nests containing eggs, built in thistles, although other bushes were convenient.

I should have mentioned that this bird is a partial migrant, appearing in Riverina generally in spring. In Western Australia (Point Cloates) it is common amongst the smaller kinds. On one occasion several of these beautiful birds were found drowned in a horse trough. Mr. Carter tells me the Tricoloured Chat sometimes builds its nest on the top of a bunch of spinifex, and that he has noticed eggs in March and July, according to the seasonal rains.

232.—EPHThIANURA AURIFRONS, Gould.—(232)

ORANGE-FRONTED BUSH CHAT.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 65

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 668.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 380 (1865); Ramsay: Proc. Linn. Soc., N. S. Wales, vol. vii., p. 48 (1832).

Geographical Distribution.—South Queensland (interior probably), New South Wales, Victoria, South, West, and North-west Australia.

* A fine male specimen which he himself shot while traversing, soon after sunrise on the 11th December, 1839, the forest lands near Peel River, to the eastward of Liverpool Plains, and which became the type

Nest.—Similar to that of the *E. tricolor*; cup-shaped, constructed of fine twigs and grasses; lined inside with fine grass. Usually placed near the ground in a cotton, salt, or other low bush in open country or plains. This species sometimes nests in company with *E. tricolor*. Dimensions over all: $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, about 2 inches across by 1 inch deep.

Eggs.—Clutch, three usually, four occasionally; oval in shape; texture of shell fine; surface slightly glossy; colour, pinkish-white, beautifully spotted, particularly around the apex, with pinkish-red and purple. Dimensions in inches of a proper clutch: (1) $\cdot71 \times \cdot52$, (2) $\cdot7 \times \cdot52$, (3) $\cdot7 \times \cdot51$. (Plate 11.)

Observations.—The Orange-fronted Bush Chat is another "wee beauty" of the desert interior, enjoying a range probably co-extensive with its beautiful cousin the Tricoloured variety. On the authority of Mr. Tom Carter I have recorded it for the vicinity of the North-west Cape. Mr. Keartland also found it in the North-west desert, and gives us a pretty picture, where at Lake Way, being particularly numerous, they were clinging to twigs and rushes projecting above the surface of the water, or were seen mingling with Dottrels on the damp sandy shores.

In the back blocks, where it appears in spring in the cotton-bush and salt-bush country, the Orange-fronted Chat is called the "Native Canary," and usually builds in the "major" salt-bush, never in the small. The eggs in my collection are from Riverina, and were taken by Mr. J. T. Gillespie, October, 1886. I had others kindly sent me by Mr. Leslie Cameron, taken in the same region. I believe the Orange-fronted Chat is occasionally an autumn breeder.

233.—EPHTHIANURA CROCEA, Castelnau and Ramsay.

YELLOW-BREASTED BUSH CHAT.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 14.

Reference.—Cat. Birds Brit. Mus., vol. vii., p. 669.

Previous Description of Eggs.—North: Proc. Linn. Soc., N S. Wales, vol. xxiii., p. 380 (1898).

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland.

Nest.—Small, cup-shaped; irregularly formed on the outside with thin dried stalks of herbaceous plants, and lined inside with fine wiry grasses and rootlets (North).

Eggs.—Clutch, three; oval in form; colour, pure white, with minute dots and spots of blackish-red sparingly distributed over the surface, and undistinguishable, except for their smaller size, from those of *E. aurifrons*. Dimensions in inches: (1) $\cdot62 \times \cdot45$, (2) $\cdot62 \times \cdot44$, (3) $\cdot6 \times \cdot43$ (North).

Observations.—This beautiful Ephthianura, which was discovered by my friend Mr. T. A. Gulliver on the Norman River, near the Gulf of Carpentaria, is an inhabitant of Northern Australia. It is smaller in size and the yellow more intense in colour than *E. aurifrons*, and moreover may be readily distinguished from that species by the black mark on the chest.

In the neighbourhood of the Gulf of Carpentaria, Mr. Price Fletcher tells us it usually frequents marshy and long grassy swamps, instead of dry plains, as do the other Ephthianuras or Bush Chats.

FAMILY—PARIDÆ: TIT-MICE.

SUB-FAMILY—PARINÆ.

234.—XEROPHILA LEUCOPSIS, Gould.—(234)

WHITE FACE.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 67.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 73.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 407, pl. 3, fig. 7 (1882); Campbell: Southern Science Record (1883); North: Austr. Mus. Cat., pl. 9, fig. 14 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, South and West Australia.

Nest.—Bulky, covered in, with side entrance; composed of coarse grass; lined with feathers, hair, etc.; usually situated in a low, thick bush, but sometimes in holes of trees, eaves of outbuildings, etc., on plains or open timbered country.

Eggs.—Clutch, four to five; roundish or stout oval in shape; texture of shell fine; surface slightly glossy; colour, buff or pinkish-white, more or less smudged and spotted with umber or reddish-brown and purplish-grey. In instances some of the markings form a belt round the apex. Dimensions in inches of a large pair: (1) $\cdot76 \times \cdot57$, (2) $\cdot72 \times \cdot57$; of a small pair: (1) $\cdot71 \times \cdot53$, (2) $\cdot7 \times \cdot52$. (Plate 11.)

Observations.—This curious little bird is found in nearly all the interior provinces of the States, where it is fairly numerous. Mr. C. French, Junr., reported one season having seen the White Face on the Werribee plains, near Wyndham, Victoria. It has since been observed as near Melbourne by other field naturalists.

The Xerophila or White Face may be recognised by its lively actions and sweet chirping notes.

The nest, and at all events the eggs, forwarded to Gould by the collector, Mr. F. Strange, as pertaining to the White Face, evidently belonged to another bird—most probably the Yellow-tailed Tit (*Acanthiza chrysorrhoa*), which I have found breeding in the same bushes with the White Face. Hence a case of mistaken identity may have occurred.

The nests of the White Face I have more particularly noticed were on the Murray plains, where the birds built large cosy nests in the thick polygonum bushes. I think it is Mr. Bennett who stated that he once found a nest attached to an Eagle's nest.

Breeding months, usually August to December.

I have a note of an instance when a nest with four eggs was found at Cooper's Creek as late as 24th March (1887). It was built of fine twigs, lined with feathers, and placed in a cotton-bush.

The following is one of Mr. Keartland's interesting western notes referring to the White Face:—

"In the mulga scrubs between Mulla-wa and Lake Way these birds were frequently seen, either singly or in small flocks. They are very active, either on the ground or amongst the scrub. Their bulky nests are usually located amongst drooping foliage of the casuarina or acacia, but on one occasion Mr. Jones pointed out a hollow log about eight feet high into which he had noticed a small bird disappear, and on splitting it open we were surprised to find a *Xerophila's* nest, containing three fresh eggs at the bottom of the spout (date 8th February, 1896). A few days afterwards another was found in a similar position. The *Xerophila* was not found further north than Lake Augusta."

The following interesting note by Mr. Robert Hall respecting the nesting of the White Face appeared in the "Victorian Naturalist," June, 1897:—

"For years past several pairs have, along with the common Sparrow, occupied portions of the verandah, etc., of a wayside inn at Lake Boga, Swan Hill District, Victoria. The nest is loosely constructed, rather smaller than that of the Sparrow, and generally contains four or five eggs at a sitting, several broods being reared in the season. The birds are generally considered insectivorous, but here they seem quite partial to crumbs and refuse from the house, as well as to the company of man, for one nest was built within a few feet of the business door of the establishment. Had the birds been living among the timber in their natural way, dried grass would have been chosen for the nesting material; but in the case under notice a great variety of material was brought together, such as portions of lace veils, wool, cloth, string, grass and feathers, which often lie about the doors of country houses. Perhaps the most peculiar action of these birds was the choice, last September, by a pair of them, of the end of a loosely rolled up curtain of a waggonette in which to build their nest. The vehicle had not been used for some weeks, but before they could have sat long upon the eggs the waggonette was used for a couple of short journeys on alternate days without the birds being noticed or disturbed. However, five days after, the trap was sent a journey of twenty-two miles, and

on its return the curtain was lowered, when, to the surprise of the owner, down fell a nest with five eggs, far incubated, as they contained living chicks."

235.—*XEROPHILA PECTORALIS*, Gould.

CHESTNUT-BREADED WHITE FACE.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii, pl. 27

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 74.

Nest and Eggs.—Undescribed.

Geographical Distribution.—South Australia.

Observations.—Practically nothing is known of this pretty little Finch-like bird beyond that the type specimen was procured at Port Augusta, South Australia, and was forwarded by Mr. Waterhouse to Gould in England to be described and figured.

236.—*XEROPHILA NIGRICINCTA*, North.

BLACK-BANDED WHITE FACE.

Figure.—North: Report Horn Scientific Expedition, pl. 7

Reference.—Report Horn Scientific Expedition, p. 82

Previous Description of Eggs.—North: Report Horn Scientific Expedition, p. 83 (1896).

Geographical Distribution.—Central Australia.

Nest.—Similar to that of the common White Face (*Xerophila*), bulky, covered in, and usually situated in low scrub.

Eggs.—Clutch, probably four; inclined to oval in shape; texture of shell fine; surface glossy; colour, light buffy white, mottled lightly all over with amber and greyish markings, the markings not being so pronounced as on those of the common species. Dimensions in inches of a pair: (1) $.7 \times .53$, (2) $.7 \times .54$; odd example: $.7 \times .52$.

Observations.—The Black-banded White Face was one of the ornithological discoveries of the Horn Expedition to Central Australia. It is apparently a good species, smaller and more rufous-coloured than the Chestnut-breasted bird.

Since the expedition, Mr. G. A. Keartland (one of its members) received from Mr. C. E. Cowle, of Central Australia, two eggs of the Black-banded variety, which Mr. Keartland has kindly allowed me to use for my description.

FAMILY—LANIIDÆ: CROW SHRIKES.

SUB-FAMILY—GYMNORHINÆ.

237.—GYMNORHINA TIBICEN, Latham.—(92)

BLACK-BACKED MAGPIE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 46.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 91.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 300 (1865); Campbell: Southern Science Record (1882); also, Proc. Roy. Soc., Victoria, vol. vii., new ser., p. 212 (1894); North; Austn. Mus. Cat., pl. 7, figs. 4-5 (1899).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Open, bowl-shaped, constructed of dead sticks, twigs, and coarse bark; lined inside with strips of fine bark, grass, hair, feathers, &c., and usually situated in the forked branches of a tree—sometimes tall, at other times a low bushy one. Dimensions over all: about 13 inches by 8 inches in depth; egg cavity, 5 inches across by $3\frac{1}{2}$ inches deep. A nest observed on a fringe of mallee was decorated with numerous long emu feathers artistically interwoven round the rim.

Eggs.—Clutch, three to four, occasionally five; although varying in shape, chiefly of a lengthened form; the texture of the shell somewhat fine and glossy. There are many different characteristics of colouring. Three types may be singled out for description: (*a*) Ground colour bluish or French grey, beautifully marbled nearly over the whole surface with streaks, dashes and smudges of pinkish or brownish-red. In some instances the markings form a confluent patch about the apex. (*b*) Other specimens are more greenish in ground colour, and are clouded or blotched with drab. (*c*) Another set has a greenish ground colour, but instead of reddish streaks is moderately marked with large roundish spots and blotches of amber and dull slate, most of the blotches having penumbra-like edges. Faint traces of hair-like lines also appear upon the surface of the shell. A full clutch taken in Riverina measures, in inches: (1) 1.46×1.05 , (2) 1.45×1.05 , (3) 1.44×1.07 , (4) 1.43×1.08 , (5) 1.43×1.04 . Another set from Queensland gives: (1) 1.53×1.1 , (2) 1.49×1.09 , (3) 1.48×1.11 .

There is also considerable difference in the character and colour of the markings of the various clutches, so much so, that it is hard to understand why eggs so totally distinct should be laid by birds of the same species, and that frequently in the same locality. Another "nut" for the theorists on egg-colouration to crack.

Observations.—I think we shall find this species ranges from the Gulf of Carpentaria district down through the interior parts of Queensland, New South Wales and Victoria to South Australia—the focus of numbers being probably in South Queensland, New South Wales, and the Lower Murray district. At early dawn the beautiful piping notes of this Magpie may be heard arising from various belts of timber, but the majority of the birds seldom leave their roost till about sunrise, when they depart singly, in pairs or small companies, to feed upon the plains or other open ground. They revisit the timber during the day, but towards evening may again be seen on the ground before the various lots hurry in to retire for the night at sundown. At such a time their evensong seems if possible more cheerful. Perhaps five or seven birds will form themselves into the approved art pyramid upon the dead top branches of a gum tree—one bird starts to carol, others chime in, and all conclude in a most joyful chorus as of thankfulness to the departing day.

After the breeding season, and during the winter months, the Magpies congregate in some localities in considerable numbers. This I have more particularly observed in connection with the next species, the White-backed Magpie. Gould says it would appear that the young keep in the company of their parents for the first ten months—that would be till the following pairing season. The pairing season will be found to commence in July, some of the earlier birds laying in August, but the majority lay in September, and the breeding season generally may be said to extend to the end of the year.

As giving an insight into the habits of the Black-backed Magpie, I may relate the history of a pair I saw in Riverina lately, breeding close to the homestead at Dunvegan, near Deniliquin. An exceedingly handsome male bird was taken when young from the bush, reared, and allowed his freedom about the place. When he was about two years old, hen-birds from the bush came and coquetted with "Charlie," as he is called, who appeared to pay little heed to his admirers. At last the seductions of one of the hen-birds proved too great, and the pair commenced to build a nest in the nearest tree, not one hundred yards from the house. Charlie proved an exceedingly devoted husband, feeding his mate upon the nest regularly by conveying food from the kitchen table, the meat block, and in fact from anywhere he could steal it. This recurred for seven seasons; the seventh season's brood I was a witness to, and saw Charlie procuring meat in the kitchen to feed the young. Once Charlie's wing was clipped, when he was forced to climb the tree instead of using flight. On another occasion he unfortunately lost a leg in a trap. It was almost ludicrous to watch how the poor bird used the stump in climbing to assist to feed his offspring. When a brood (usually four in number) was reared, honours seemed to be divided—he brought two about the house, while the wild bird enticed her pair into the bush.

Magpies in their natural state mostly procure their food upon the ground, devouring almost anything that creeps or crawls, including lizards and possibly small snakes. Occasionally they eat grain, berries, and other fruit, but those persons who contend that Magpies are granivorous need only place a bird in a cage, feed it upon grain diet, and note how soon it will die. Especially in dry or cold seasons, when the birds are

hard pushed for food, they will eat the grain in its soft and milky state, in the ground, germinating. Because of this, some farmers think all Magpies should be destroyed. However, others are content to keep watch over their fields from sunrise to sunset during the few weeks the birds are most likely to attack the germinating grain, because of the good conferred upon the land by the Magpies in catching grubs, &c., during the remainder of the year. What if the Magpies do take a little grain? It is written, "A labourer is worthy of his hire." One fruitgrower as well as a farmer, after most favourable opportunities of studying the Magpie for over thirty years, wrote to the Hon. the Commissioner of Customs (who administers the "Game Act") to the effect that he found the Magpie to be a farmer's friend and the best of insect destroyers. The Magpies built their nests every season within a few yards of his residence, and he had every opportunity of knowing that these birds fed their young extensively on insects of all kinds.

It is well known that Magpies can be taught successfully to imitate the human voice in speech. When they attain this accomplishment they invariably drop their own clear wild notes, giving voice occasionally to a loud, half-crowing, half-whistle-like sound, which is simply abominable as compared with the defightful flute-like cadenza one hears the bird pour forth when in native freedom.

I was informed of a gentleman who had a Magpie that lived in captivity for thirty-one years. The bird used to imitate the voice of a relative who had been deceased for some time.

Albino varieties occasionally occur in all kinds of birds. The Magpie would appear to be peculiarly susceptible to this freak of nature, if we may judge by the number of birds we see exhibited at public shows, &c. During the season of 1898, on the Wakool, Riverina, there was a nest containing four young Magpies of the black-backed species, two of which were true albinos, with pink-coloured eyes. At Warroo, in South Queensland, my venerable friend Mr. Hermann Lau once found a black-backed Magpie's nest containing two eggs of that bird, in addition to a pair of eggs of the Great Cuckoo or Channel Bill (*Scythrops*). He also noted that on the Darling Downs the Magpie usually reared two broods a season, one in August, another about October.

238.—GYMNORHINA LEUCONOTA, Gray.—(93)

WHITE-BACKED MAGPIE.

Figure —Gould: Birds of Australia, fol., vol. ii., pl. 47.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 92.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also, Handbook, vol. i., p. 177 (1865); North: Austn. Mus. Cat., p. 59 (1889); Campbell: Proc. Roy. Soc. Victoria, vol. vii., new ser., p. 212 (1894).

Geographical Distribution.—New South Wales, Victoria and South Australia.



NEST OF THE WHITE-BACKED MAGPIE.

From a Photo by the Author

Nest.—Open, bowl-shaped; constructed of dead sticks and twigs, well lined inside with bark, wool, grass, sometimes she-oak (*Casuarina*) needles, etc., and usually situated in the forked branches of a tree. Dimensions over all, 14 to 18 inches by 7 inches in depth; egg cavity, 6 to 8 inches across by 3 to 3½ inches deep (See illustration.)

There is in the Adelaide Museum a curious exhibit, a nest of this species outwardly composed of twisted and crooked pieces of sleep fencing wire. A nest taken from some melaleuca scrub near the coast, was composed entirely of wire-like roots, and well fitted inside with string, pieces of jute, etc. The roots were melaleuca and had evidently been taken from a newly grubbed piece of ground near.

Eggs.—Clutch, three to four, occasionally five. Three types of eggs may again be selected as the most common, all somewhat lengthened or oval in form. (*A*) Ground colour light or pale-green, almost hidden with streaky and cloudy markings of pinkish-red. (*b*) In others the markings are drab or brown. (*c*) These examples have a plain grey (sometimes greenish) ground colour, and like the type "*c*" in *G. tibicen* are moderately, almost sparingly, marked with roundish spots and blotches of umber and dull-slate. Some exceptional examples of a beautiful bluish-green colour, are devoid of markings save a few indistinct freckles of chestnut. Dimensions in inches of a clutch of type "*b*": (1) 1.58 × 1.07, (2) 1.57 × 1.04, (3) 1.52 × 1.08; a clutch in type "*c*": (1) 1.56 × 1.12, (2) 1.56 × 1.1, (3) 1.55 × 1.1. (Plate 11.)

Observations.—This showy and splendid species inhabits the coastal regions and more heavily forested parts of New South Wales, Victoria and South Australia. Whether it extends further west has not been fully determined. In Victoria, south of the Great Dividing Range, the White-backed species is very abundant. It is instructive to observe how that natural barrier divides the two species—the White-backed from the Black-backed variety. During several trips on our main railway line across Victoria, I noted White-backed Magpies very numerous as far as Mount Macedon (43 miles) and Kyneton (56 miles). Beyond, the numbers seemed to decrease. The first Black-backed birds were seen at Malmsbury and Taradale (67 miles). The last White-backs were noted beyond Castlemaine at Harcourt and Ravenswood (90 miles). In the Bendigo (100 miles) district* the tide of Black-backs had fairly set in, and by the time the plains of the Murray were reached these birds were in great evidence.

As may be expected, the natural habits and characteristics of the Black-backed Magpie appear in the White-backed species. However, as Gould experienced, the White-backed birds are more wary and shy in disposition. To a discriminating ear the delightful clear ringing call

* Mr. H. E. Hill, writing from the Bendigo district five years after I made this statement before the Royal Society of Victoria, states he finds the White-backs the commoner of the two species there. Of late years, or since Magpies have been protected all the year round, they have considerably increased in numbers, and have appeared in localities where they were not noticed before. Perhaps this is a case in point

is fuller and louder in the White-backed than in the other species. I have endeavoured to class the different notes, of which there appear three kinds at least—the carol or song, a whistle-like call, and a long “squawk”-like note of alarm.

Both male and female birds carol. I have listened to their pleasing songs as early in the day as an hour and forty minutes before sunrise. They also occasionally sing during mild moonlight nights.

I possess a note of this species also breeding in semi-captivity, but in this instance the tame bird was the female. She was two years old when she built a nest on a roof of an outbuilding near my uncle's (Mr. Wm. Campbell) house, Heyfield, Gippsland, and a pair of young was hatched. She was a most persistent nuisance when building her nest—pulling fibre out of door mats, unravelling the edges of oilcloth, etc. One day, after a chance hair-cutting operation, the bird eagerly seized mouthfuls of hair to finally trim her nest. This bird lost its beautiful native carol, adopting instead the voices of various roosters and other farm-yard fowls.

“The Australasian” (December 31st, 1898), says: “It is seldom that a Magpie builds in captivity; but Mr. Herbert Buckley, of East Malvern, possesses one which has built every year for five successive years, and laid three eggs on each occasion. The nest, of which a photograph is shown, is built in the fork of a fuchsia bush, in bloom, about three feet from the ground, in Mr. Buckley's garden. The bird usually builds about the middle of October or the beginning of November. The nest is composed of wire, bits of string, straw, &c., and the time and trouble involved in its construction are little short of wonderful.”

Some birds, especially old ones, grow very savage, and will attack and strike persons approaching the vicinity of their nest. Once I saw a pair enforce the “move-on” clause on a Wedge-tailed Eagle, which the Magpie attacked from above—every thrust making tufts of feathers fly from between the shoulders of the great bird of prey. I heard of a “hen-wife” who kept a couple of tame Magpies about the farm because they encouraged wild ones near, which were a safeguard to her chickens and young poultry against certain birds of prey. If a hawk appeared anywhere in the neighbourhood it usually met with a warm reception from the Magpies.

The nidification of the White-backed Magpie resembles in general that of the Black-backed species. The breeding seasons are also alike. However, it is somewhat strange that nests of both kinds containing young were observed during the autumn (April-May) of 1897. When sitting, the female is sometimes fed by the male, on her nest.

Since the above was written I sent the following to “The Australasian”:—“Notwithstanding the dislike farmers have for the Magpie, because it has cultivated a taste for fruit and grain, people in general love this bird for its sociableness under domestication and its delightful song when wandering free. At Bulimba, near Brisbane, Mrs. Charles Coxen (sister-in-law to the celebrated naturalist, John Gould) had a pair of Magpies which built a nest in a bunch of orchids growing in a seed-pan under the verandah; they hatched out two young. A lone female Magpie constructed a nest for herself in a vine over the front door,

and she was fed on her nest by the mate of the sitting Magpie in the verandah. Mr. Hugh Walker, who, after the ups and downs of 50 years of Australian life, is spending his declining years at East St. Kilda, has a pet Magpie which has built a nest in his bedroom, in the corner of the washstand; and it is now hatching a clutch of three eggs. 'Pattie,' as she is called, took about three weeks over the building of the nest. She commenced by bringing sticks, wire, &c., from the yard, and finished by lining the nest with hair plucked from a large floor-rug. The first egg was laid on the 16th of August (1899), the second on the 18th, and the third on the 19th. Although 'Pattie' sits steadfastly, she evidently entertains doubts about rearing her family, because she is always calling, 'There is no luck about the house when our guidman's awa!' Wild Magpies have been noticed about, and a nest was started by some in a neighbouring pine tree."

239.—GYMNORHINA HYPERLEUCA, Gould.—(94)

LESSER WHITE-BACKED MAGPIE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 48.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 92.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. 1, p. 179 (1865); North: Austr. Mus. Cat., p. 61, pl. 7, fig. 9 (1889); Campbell: Proc. Roy. Soc. Victoria, vol. vii, new ser., p. 212 (1894).

Geographical Distribution.—Tasmania.

Nest.—Open, bowl-shaped, composed of sticks and twigs, lined inside with roots, bark, grass, &c., and usually situated in the forked branches of a tree. Dimensions slightly smaller than those of *leuconota*.

Eggs.—Clutch, three to four, occasionally five; oval in form; light greenish ground colour mottled and marked all over with umber. Another class of specimens which, however, is not so common, is rounder in form and more of a distinct greenish colour, moderately marked as in type "c" of the preceding species, with roundish blotches of umber. Interspersed are also a few wavy markings. Dimensions in inches: clutch—long examples: (1) 1.52 × 1.09, (2) 1.45 × 1.05, (3) 1.35 × .98. Two, from a clutch of four—round examples: (1) 1.42 × 1.09, (2) 1.4 × 1.12.

Observations.—The Tasmanian Magpie is an insular form of the White-backed Magpie of the mainland. Considering that the Tasmanian forms of the same species of the mainland birds are usually larger, it is worthy of remark that the Tasmanian Magpie is smaller—an additional fact, perhaps tending to prove that it is a good species and not merely a smaller race of *G. leuconota*. Likewise, it is a curious fact that, although some of the birds peculiar to Tasmania—including a

Strepera closely allied to *Gymnorhina*—are met with on the larger intermediate islands in Bass Strait, the Magpie is altogether absent.

Tasmania was the first State that extended protection to Magpies as birds of usefulness, consequently, through not being molested, one finds them exceedingly tame, even sometimes building their nests in trees by the wayside of thoroughfares and streets. I was greatly entertained one day by a Magpie, perched upon a three-railed fence, piping its merry song to a railway train which whizzed past within a few paces of the bird. The Tasmanian Magpie usually lays three or four eggs, but I have heard of sets of five, as with the mainland species. The breeding season is from August to the end of the year. Mr. Arthur E. Brent, from his own observation, informs me that these birds are not at all particular what they use as constructing material for a home. One nest he saw was built of wire for binding sheaves of grain, which was thrown in a heap after threshing. Mr. Brent also observed another nest which was constructed of reaper and binder twine. This nest was lined with horse manure. But of course these are merely exceptions, the nest usually resembling those of the other Magpies. Mr. Brent adds that the Magpie is useful as a vermin destroyer, because he has seen them killing mice in numbers. Underneath and adjoining a nest of this Magpie I, on one occasion, found the smaller nest of the Yellow-tailed Tit (*Acanthiza*). The fact, however, is not new, for collectors on the mainland have not unfrequently met with similar instances.

240.—GYMNORHINA DORSALIS, Campbell.

LONG-BILLED MAGPIE.

Reference.—Campbell: Proc. Roy. Soc. Victoria, vol. vii., new ser., p. 209 (1894).

Previous Descriptions of Eggs.—Campbell: Proc. Roy. Soc. Victoria, new ser., vol. iii., p. 2 (1890); also vol. vii., p. 213 (1894.)

Geographical Distribution.—West and North-west Australia.

Nest.—Open, bowl-shaped, constructed of sticks and twigs, lined inside first with bark, then with a ply of finer bark about one inch in thickness and usually situated in the forked branches of a tree. Dimensions over all, about 11 to 12 inches; egg cavity, 6 inches across by $2\frac{1}{2}$ inches deep.

Eggs.—Clutch, three to four, usually three. The West Australian eggs exhibit less variety of colouring and more resemble the "a" type in both those of *G. tibicen* and *G. leuconota*. The form is lengthened or oval; ground colour varying from bluish-grey to greenish-grey in tone, beautifully streaked or marbled all over with rich pinkish-brown

or chestnut. The following are the dimensions in inches of three clutches:—

- A (1) 1·7 × 1·05, (2) 1·55 × 1·1, (3) 1·51 × 1·08
 B (1) 1·69 × 1·08, (2) 1·61 × 1·05, (3) 1·62 × 1·06
 C (1) 1·66 × 1·06, (2) 1·58 × 1·06, (3) 1·43 × 1·03

(Plate 11.)

Observations.—The recorded data regarding the geographical range of the *Gymnorhina* on the Continent are somewhat perplexing to ornithological students. Gould states in his "Handbook," "It is true that a bird of this genus inhabits the neighbourhood of Swan River (West Australia), whose size and style of plumage are very similar (to *G. tibicen*), but which I have very little doubt will prove to be distinct," and in his tabulated list in the West Australian column he has inserted *G. tibicen* with a query against it. Yet under the heading of *G. leucanota*, he says that bird (*G. leucanota*) is called "Goore-bat" by the aborigines of the low-land districts of *Western Australia!* In Dr. Ramsay's "Tabular List" (1883), *G. tibicen* is indicated in the West Australian division, while in his last list (1888) this author has substituted *G. leucanota* without assigning reason for so doing.

During my own visit to the Western Territory in 1889, I thought the first point might be easily settled as to which of the two species actually inhabits Western Australia. But to my surprise, on dissecting birds in the bush and observing others in captivity, I found that the mature male bird possessed a *white* back, while the female's was *black*,* besides other minor differences, all pointing to a species distinct from either of the eastern forms. For the new variety I suggested the specific name *dorsalis*, on account of the different markings of the backs, and to be known on the vernacular list as the Long-billed Magpie on account of its longer and narrower bill. Perhaps I should say here that during a recent visit of Colonel Legge to Melbourne, I took the opportunity of bringing under his notice examples of the two eastern birds, together with the western form, and after examination, and without any hesitancy, he concurred in my deductions.

With regard to the range of the western bird I take it to be fairly distributed as far as South-western Australia is concerned, excepting the heavily forested Karri country between King George's Sound and Cape Leeuwin, where I did not observe a single bird. After getting out of the Karri country I noticed the bird in the neighbourhood of Geographe Bay in the more open Jarrah tracts, and along the coast northward. It is said to be found generally throughout the jam-wood (a species of *Acacia*) country. I noted it as far south as Cranbrook, on the overland railway, sixty-seven miles from Albany. A few, I am informed, occur in the upper Murchison and Gascoyne districts, and as far north as the Hammersley Range plateau.

* The adult female I described before the Royal Society of Victoria I have since proved to be an immature bird. I am able to correct myself through the goodness of Mr. Bernard Woodward, Perth Museum, who has kindly sent me a mated pair, together with a pair of immature birds.

At Geraldton, Champion Bay, I had an opportunity of examining a very fine female bird in a state of domestication. By the way, she rejoiced in the name of "Jacob." She was an intensely amusing bird and full of mischievous glee. I should have mentioned that, although the native notes of the western Magpie resemble those of its eastern congeners, the western type seems to lack that hilarity of song so noticeable in both the eastern birds.

September, October, and November constitute the chief breeding months.

In the report of the "Birds Collected by the Calvert Exploring Expedition" (Trans. Roy. Soc. S.A., vol xxii., p. 173), Mr. G. A. Keartland states that at Lake Way, on the 12th July, 1896, three Black-backed Magpies were seen, and a few days subsequently others were noted; and whilst in the train, between Fremantle and Perth, Mr. G. L. Jones drew his attention on several occasions to White-backed Magpies perched on the trees near the railway line. Of course the forms of Magpies in the field are much alike, therefore it is a pity Mr. Keartland was unable to handle one of these birds, or, better still, been able to bring back a skin; then he might have been convinced, as I was, that these Western Magpies were referable to neither of the species he mentions, but to the Long-billed variety, I noticed in 1889, and had carefully compared with examples of Magpies from various parts of Australia and Tasmania. As the various Magpies in their showy and attractive garbs of simple black and white are so much alike, I subjoin detailed descriptions of the birds:—

Gymnorhina tibicen. Adult male.—Glossy bluish-black, except portions of the under parts and primaries, which are of a more brownish tinge; nape and hind neck, upper and under wing coverts, edge of wing, upper and under tail coverts, tail except a broad terminal band and outer web of either of the outermost feathers) and vent, white. Bill, bluish-white, graduating through blue horn colour into bluish-black at the tip; irides, light hazel; legs, black. Adult female.—Differs in possessing a more brownish tinge throughout the black plumage, and by having the nape and hind neck, and lower back grey instead of white. Young.—Most resemble the female, with the dark portions of the plumage brownish-black.

Gymnorhina leuconota. Adult male.—Black generally, more glossy on some portions, and brownish tinged on other parts, except nape and hind neck, back, upper and under wing coverts, edge of wing, upper and under tail coverts, tail (except the terminal band and outer web of either of the outermost feathers) and vent, white. Bill bluish-white, graduating through bluish-slate into bluish-black at the tip; irides, light hazel; legs, black. Adult female.—Differs in having the back portions of the plumage not so intense in colour, and by having back of neck and back grey; some of the feather shafts, particularly on the back, showing a fine dark stripe. Young (from the nest).—Most resemble the female. About three dozen birds had, excepting the head, the dark portion of the plumage rusty-brown, with whitish napes, and in one or two conspicuous instances rusty-coloured and greyish mottled backs.

Gymnorhina dorsalis. Adult male.—Resembles most the male of *G. leuconota*, but is smaller in size, bill narrower, more curved and longer, edge of wings slightly mottled instead of white, and the black terminal band of the tail narrower and more concentric in form. Bill, bluish-white, graduating through bluish horn-colour into bluish-black at the tip; irides, hazel; legs, black. Adult female.*—Resembles female of *G. leuconota*, with a much darker (grey) back, and has the black portions of the plumage, especially the under surface and primaries, browner in tone. Young.—Male, resembles the adult female, but with a still darker back. Female, has brownish-black or almost black back.

Gymnorhina hyperleuca. Adult male.—Glossy bluish-black or glossy black, except nape, hind neck, back, upper and under wing coverts, tail (except the terminal band and outer web of either of the outermost feathers) and vent, white; edge of wing, white mottled with black; bill, bluish horn colour graduating into black at the tip; irides, clear or bright hazel; legs, black. Adult female.—Differs in having the hind neck and back grey, and the primaries and terminal band of the tail brownish-black.

Comparative dimensions in inches.

Species.	Total length.	Culmen.	Wing.	Tail.	Tarsus.
<i>G. tibicen</i> (male)	15.75	2	10.1	6	2
(female)	15.75	1.7	9.7	6	2
<i>G. leuconota</i> (male)	17	2.18	11.5	7.25	2.5
(female)	16.25	2.06	10.75	6	2.25
<i>G. dorsalis</i> (male)	15.5	2.31	10.25	6.1	2.1
(female)	16	2.18	10.5	6.25	2.2
<i>G. hyperleuca</i> (male)	13.5	1.75	9.4	5.5	2

241.—CRATICUS QUOYI, LESSON.—(98)

BLACK BUTCHER BIRD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 53

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 94.

Previous Description of Eggs.—Campbell: Read, Roy. Soc. Victoria (1895);
Published, Wombat (1897).

Geographical Distribution.—Northern Territory and North Queensland; also New Guinea and adjacent islands—Waigiou, Aru, and Salwatti.

* See footnote, p. 297.

Nest.—Resembles that of the Black-throated Butcher Bird (*C. nigrigularis*); composed outwardly of twigs, lined inside with rootlets, and usually situated in the forked branches of a tree, in scrub or in open forest.

Eggs.—Clutch, three usually, four occasionally; stout oval in form; texture of shell somewhat fine; surface glossy; colour, beautiful greyish-green, sparingly but boldly marked with roundish spots and blotches of sepia or umber, and a few markings of dull-slate. The majority of the markings are about the apex, and some have the edges softened off penumbra-like. These eggs, excepting that they are smaller, resemble a type (*c*) described for the *Gymnorhina* (Magpies). Dimensions in inches of a proper clutch: (1) 1.4×1.0 , (2) $1.35 \times .98$, (3) $1.33 \times .89$. (Plate 12.)

Another type resembles that of the Black-throated Butcher Bird (*C. nigrigularis*): (1) $1.4 \times .77$, (2) $1.27 \times .92$. In a beautiful set of four in the collection of Mr. Dudley Le Souëf, the examples are not unlike small Crow's eggs, both in colour and character of markings.

Observations.—Some years ago I received from the late Dr. Kutter a single example of the egg of the Black or Quoy Butcher Bird, from the Aru Islands. I was under the impression that the eggs from Australia had been described until I found to the contrary, when recently working up notes on the nests and eggs of the genus.

Mr. K. Broadbent's observations about the Black Butcher Bird are that "It is found in the Cardwell Scrubs, and is distinctly a scrub bird, only inhabiting the thickest parts near the rivers. It is an accomplished whistler, with a very deep note, and is extremely shy, being only seen flitting across from covert to covert. This bird is not found far south of the Herbert River. I have procured it at Cooktown, but do not know of its occurrence further north. This Crow Shrike is also recorded from the Northern Territory of South Australia, though it is a curious fact that I have never seen it in the Gulf of Carpentaria, notwithstanding my somewhat lengthy sojourns in that district. I should give its habitat as from the Herbert River to Cooktown, that is, its Queensland habitat."

To Messrs. D. Le Souëf and W. B. Barnard I am indebted for specimens, or notes from personal observations on the nidification of this fine northern species. Mr. Le Souëf informs me that during his visit to the Bloomfield River district of Northern Queensland, he noticed a pair of Black Butcher Birds frequently in a patch of scrub, but they were shy, and he did not often get a near view, although their clear liquid notes were often heard, either singly or in concert. However, after careful observation for some time, the hen was seen to fly into a thick leafy tree, and there remain. Mr. Le Souëf made his way through the scrub towards the tree, and when a short distance off saw the bird fly away. The nest was soon discovered, but had it not been for seeing the bird fly off, the nest and its handsome eggs would probably have been missed, so thick was the leafy covert. The nest was situated about thirty feet from the ground, in a fork made by a fairly thick bough branching from the parent stem. The eggs, three in number, were slightly incubated. Date: 23rd October, 1894. A second nest was found 4th November,

but in this instance situated about fifty feet from the ground, near the top of a eucalypt, by a small stream, in open forest country. One of the parent birds was secured with the nest and eggs. The eggs, as in the former instance, were slightly incubated. The chief breeding months are October, November, and December.

To persons who may still contend that the Rufous Butcher Bird (*C. rufescens*) is the female or immature bird of the Black species, will find "a nut to crack" in the following note by Mr. Harry Barnard when he was at Cape York: "I saw one nest of the Quoy Butcher Bird with three young ones fully-fledged. *They were all black.*"

242.—*CRATICUS NIGRIGULARIS*, Gould.—(95)

BLACK-THROATED BUTCHER BIRD

Figure—Gould: Birds of Australia, fol., vol. ii, pl. 49.

Reference—Cat. Birds Brit. Mus., vol. viii., p. 95.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 181 (1865); North: Austn. Mus. Cat., p. 62, pl. 9, fig. 8 (1839).

Geographical Distribution.—Australia, except West.

Nest.—Similar to that of *C. destructor*, but larger, composed of fine dead sticks or twigs, lined compactly with grasses, rootlets, &c., and placed in forked branches or branchlets of a horizontal limb of a tree. Dimensions over all, 9 or 10 inches by $4\frac{1}{2}$ inches in depth; egg cavity, $4\frac{1}{2}$ inches across by 2 inches deep.

Eggs.—Clutch, three to four, occasionally five; stout oval in shape; texture of shell fine; surface glossy; colour, brownish-olive or greyish-brown, faintly spotted all over with a darker shade of the same colour or umber, thickest or in the form of a clouded patch about the apex. Here and there are ink-like dots. Dimensions in inches of a proper clutch: (1) $1.34 \times .98$, (2) $1.31 \times .97$, (3) $1.3 \times .98$, (4) $1.29 \times .97$. (Plate 12.)

Observations.—This Butcher Bird is comparatively large, being between thirteen and fourteen inches in length. The head, neck, and chest are conspicuous for their blackness, hence the specific name, *nigri-gularis*, meaning black-throated. The rest of the plumage is black and white, the bird resembling a miniature Magpie, but with the under-surface white instead of black as in the Magpies. The bill is lead-colour, passing into a darker shade at the tip, with its characteristic notch. I first made the acquaintance of this bird—beautiful indeed, both as regards plumage and song—at the junction of the rivers Murray and Darling, in 1877. Subsequently I met it in other parts of Riverina and Queensland, which latter place, together with other localities in Northern Australia, is probably its true home.

Mentioning Queensland, and writing from Darling Downs, Mr. Hermann Lau says of the Black-throated Butcher Bird: "It has a beautiful song, sounding like a clarion, especially on spring or autumn mornings. Sometimes the site of its family home is low, at other times high in situation, and either placed on the border of a prickly pine (bunya-bunya) scrub or in a eucalypt in the forest. When the hopeful young begin to fill out their cradle, the observer usually finds underneath upon the ground the remains of little birds' heads, wings and legs of Parrakeets, on which the cruel parents feed their children. At Tumbarville, in August, 1884, I had the great satisfaction to hunt and secure a magnificent albino of this species, although many were coveting the prize. As is the case with the common Butcher Bird (*C. destructor*), two broods, if not three, are reared a season."

Mr. Harry Barnard informs me he has occasionally taken five eggs from the nest of the Black-throated Butcher Bird. It is a pity that such a beautiful creature should feed on small birds, and have been seen endeavouring to capture poor little "Tom" Tits. But such is a law of nature—one species preying upon another.

Breeding season usually commences in September, ending with the year.

243.—*CRACTICUS NIGRIGULARIS* (sub-species) *PICATUS*, Gould.—(96)

PIED BUTCHER BIRD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 50.

Reference.—Cat Birds Brit. Mus., vol. viii., p. 96

Previous Descriptions of Eggs.—Le Souëf: Victorian Naturalist (1897); also vol. xvi., p. 67 (1899.)

Geographical Distribution.—North-west Australia and Northern Territory.

Nest.—Open, composed of sticks, lined with small twigs and rootlets, and generally placed high in a large tree. Dimensions over all, 6 inches by 4 inches in depth; egg cavity, $3\frac{1}{2}$ inches across by 2 inches deep (Le Souëf).

Eggs.—Clutch, three usually; inclined to pear-shape or pyriform; texture of shell comparatively fine; surface glossy; colour, light or pale olive-brown, blotched especially about the apex with amber and dull brown, with sometimes here and there an ink-like dot. Dimensions in inches of a proper clutch: (1) $1.19 \times .89$, (2) $1.18 \times .88$, (3) $1.16 \times .86$. Similar to *C. nigrigularis*, but smaller.

Observations.—When describing the nest and eggs before the Field Naturalists' Club of Victoria, Mr. D. Le Souëf remarked:—"I noticed this bird on several occasions when at King's Plains, about 30 miles from Cooktown, North Queensland. They are very similar in appearance to *C. nigrigularis*, but are smaller and have a totally different note, and it is possible the two varieties may be found in the same country, although

I did not notice any *C. nigrigularis* near Cooktown myself; but they were plentiful at Rockhampton. The bird is found in the open forest country, and I only heard it utter one note—a single clear low whistle, produced slowly. Gould, on Gilbert's authority, states that it utters a loud discordant note; but personally I only heard the one sound. A pair of them had their nest in a large eucalyptus tree, about two hundred yards from the house where I was stopping, and they did not appear very shy, and were easily approached within shooting distance. These birds were not plentiful, and seemed to consort in pairs, it being breeding time. The bird will sometimes sit close on the nest until the climber is within a few feet of her, as occurred when the native went up the tree for the eggs I am now describing, and she then only flew a short distance to a neighbouring tree, where in the interests of science I was able to secure her."

244.—*CRACTICUS LEUCOPTERUS*, Gould.—(101)

WHITE-WINGED BUTCHER BIRD.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 98.

Previous Description of Eggs—Campbell: Victorian Naturalist (1888).

Geographical Distribution.—West Australia.

Nest.—Very similar to that of *C. destructor*, composed of dead twigs, lined inside with a goodly ply (about $\frac{1}{2}$ inch in thickness) of grass. Dimensions over all, 7 inches by 3 inches in depth; egg cavity, 4 inches across by 2 inches deep.

Eggs.—Clutch, three to four; oval or round oval in shape; texture of shell fine; surface glossy; colour, usually warmish-grey or light-brown, blotched and spotted, especially round the upper quarter, with reddish-brown and dull-purplish-brown, with here and there a minute ink-like dot. Sometimes the reddish markings coalesce in the form of a patch on the apex. Similar to those of *C. destructor* or *C. cinereus*. Dimensions in inches of a proper clutch: (1) $1.34 \times .84$, (2) $1.3 \times .93$, (3) $1.26 \times .94$; of a smaller-sized set: (1) $1.26 \times .9$, (2) $1.26 \times .89$, (3) $1.2 \times .86$.

Observations.—This species inhabits Western Australia. As Gould remarks, it is very closely allied to *C. destructor* and *C. cinereus*, but differs from the former in the white marks on the wings being much more extensive. This, I may add, strikes an observer in the field as the bird, more particularly the male, is seen flying from tree to tree. For food, amongst other small fry, the White-winged Butcher Bird is very partial to the White Eyes (*Zosterops gouldi*).

The sets of eggs above described were taken at Quindalup by Mr. J. Harris, October, 1889, the year of my visit to Western Australia.

245.—*CRATICUS ARGENTEUS*, Gould.—(97)

SILVER-BACKED BUTCHER BIRD.

Figure.—Gould: Birds of Australia, fol., vol. ii. pl. 51

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 99.

Geographical Distribution.—North-west Australia and Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—Gould described and named this Butcher Bird from an example obtained by Mr. B. Bynoe on the northern coast. The bird is happily named *argenteus*, on account of the silver-grey colouring of the back, which distinguishes it from all the other members of the group. Doubtless in its nidification it resembles those of its fine family.

246.—*CRATICUS DESTRUCTOR*, Temminck.—(99)

C. torquatus, Lath.

BUTCHER BIRD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 52

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 100.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i p. 185 (1865); North: Aust. Mus. Cat., p. 61 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Open, basin-shaped, compactly constructed of fine dead twigs, lined with dry yellowish grass or with rootlets, casuarina needles, &c., and usually situated well up in the forked branches of trees, in mistletoe clusters, &c. Dimensions over all, 7 inches by $3\frac{1}{2}$ inches in depth; egg cavity, $3\frac{3}{4}$ inches across by $2\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, three to five; roundish oval in shape; texture of shell fine; surface glossy; colour varies, sometimes in the same clutch, usually greyish or light-brown, spotted with reddish-brown and dull-slate, the majority of the markings forming a patch on or around the apex. Dimensions in inches of a somewhat small-sized clutch: (1) $1.13 \times .86$, (2) $1.13 \times .85$, (3) $1.06 \times .84$. (Plate 12.)

Observations.—The common Butcher Bird may be said to enjoy a good range, including the States from Northern Queensland round to South Australia. The Butcher Bird may be described as possessing a dark coat, with the underneath surface greyish-white; the head is



BUTCHER BIRD'S NEST

From a Photo. by the Author.

black, relieved with some white about the face; the powerful bill is bluish horn-colour, passing into black at the tip, where is a suggestive hooked notch; feet, leaden colour; eyes, dark reddish-brown. Total length $11\frac{1}{2}$ inches, wing $5\frac{1}{2}$ inches, tail $4\frac{1}{2}$ inches, and bill $1\frac{1}{2}$ inches.

Wherever there is a bush paddock, a belt of timber, or an open forest nook, from such a place will be sure to arise during some hour of the day the mellow flute-like notes of the Butcher Bird. Even after its nest has been robbed, it will sometimes favour you with its rich melodious song. However, when alarmed or angry, the bird can utter from the same beautiful-voiced throat a harsh guttural scream.

My earliest recollection of Butcher Bird nesting was many years ago, when we found a nest in the Murrumbidgee district placed on the woody excrescence at the junction of a mistletoe (*Loranthus*) with the limb of the foster tree (a eucalypt)—a favourite position for a Butcher Bird's home. Perhaps the most handsome set of eggs I ever took was from a nest situated in a tall sapling near the creek at the rear of Oakleigh. They now grace the collection at the National Museum. The greatest number of eggs (five) I have found in one clutch of this species was on 19th September, 1894, when our genial field naturalist, Mr. Joseph Gabriel, and I were perambulating the fringe of a "box" flat in Riverina. A quintet is, I believe, frequently taken in Queensland.

The appellation Butcher Bird is well applied to the various *Cractici*. No doubt they slaughter for food many of the smaller species of birds, in addition to such vermin as small snakes, mice, &c. Once when Lyre Bird nesting in the Dandenongs, I watched from behind a fern tree trunk a Butcher Bird perched on the carcass of a tiger cat, pulling at the pleasant morsels, and every now and again pausing with bill poised in the air, as if enjoying the flavour of the decomposing beast.

Usual breeding months August to November or December, when probably two broods are reared.

247.—*CRACTICUS DESTRUCTOR* (sub-species) *CINEREUS*, Gould.—(100)

GREY BUTCHER BIRD.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 101.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882); North: Austrn. Mus. Cat., p. 63 (1889).

Geographical Distribution.—Tasmania.

Nest.—Resembles that of *C. destructor*, composed of fine twigs, lined inside with grass and rootlets and placed in any bushy tree.

Eggs.—Clutch, three to four; roundish oval in shape; texture of shell fine; surface glossy; colour varies from greenish-grey to light-brown, blotched and spotted, chiefly in the form of a belt round the apex, with reddish-brown and purplish-brown; sometimes a few ink-like

dots appear here and there over the shell. An example in one clutch has quite a greenish ground-colour at the smaller end only. Much resembles those of *C. destructor*, but a little larger. Dimensions in inches of a proper clutch: (1) 1.29 × .93, (2) 1.25 × .92, (3) 1.23 × .94.

Observations.—The Grey or Cinereus Butcher Bird is a sub-species, and the representative of the common Butcher Bird in Tasmania. It would be interesting to learn how the bird ever came to be called a Derwent "Jackass." Even now the mainland species is frequently called by that name.

During my Tasmanian excursion in the season of 1883, I was fortunate enough to take two nests on the 9th and 12th October respectively, with three eggs each of the local Butcher Bird. Its native notes appeared to me if possible to sound deeper and rounder than the song of the mainland bird.

248.—*CRATICUS MENTALIS*, Salvadori.
C. spaldingi, Masters.

SPALDING BUTCHER BIRD.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 102.

Geographical Distribution.—Northern Territory, also New Guinea.

Nest and Eggs.—Undescribed.

Observations.—According to the British Museum "Catalogue," this Butcher Bird most resembles *C. argenteus*. The first reputed specimen obtained on the Continent was shot at or near Port Darwin, 1877, by Mr. Ed. Spalding, and was described by Mr. George Masters, of the Macleayan Museum. If *C. mentalis* be really an Australian species, it is somewhat strange it has not been recorded for North Queensland, as it has been found on the opposite coast of New Guinea.

249.—*CRATICUS RUFESCENS*, De Vis.

RUFOUS BUTCHER BIRD.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 16

Reference.—Proc. Linn. Soc., N.S. Wales, vol. vii., p. 562.

Previous Description of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. xxii., p. 56 (1897).

Geographical Distribution.—North Queensland.

Nest.—One built between the trunk and a couple of branches of a small tree overhanging Ripple Creek (North Queensland), was a simple construction of twigs without lining, and showed daylight all through it (North-Boyd).

Eggs.—Clutch, two, and probably more; only distinguishable from those of *C. quoyi* by being slightly larger, of a paler green ground-colour, and rather more conspicuously marked. Dimensions: (1) 1.45 × 1.05, (2) 1.43 × 1.03 inches (North).

Observations.—There appears to exist some doubt about the validity of this northern Crow Shrike, which frequents the scrubs of the ranges from Herbert River to Cooktown. It has been hinted that this bird may yet possibly prove to be the female of the Black Butcher Bird, notwithstanding both Dr. Sharpe and Mr. De Vis agree in describing the sexes of the Rufous Bird as alike in colour. The former authority says: "*C. rufescens* is undoubtedly a good species."

Mr. Kendall Broadbent obtained the original specimen near Cairns, which Dr. Ramsay believed was the young of the Black bird. Mr. Broadbent having obtained more material in the Tully and Murray River (Rockingham Bay) scrubs, enabled Mr. De Vis to found his new species, *C. rufescens*.

However, Mr. North thinks certain field observations have to be explained away if there really be two distinct species of birds. For instance it is certainly remarkable that the Australian Museum's collector (Mr. Grant), during nearly a twelve months' trip (1888-9) in the district of the bird, never saw two Rufous Butcher Birds in company, but always one Rufous and one Black.

Then there is Mr. J. A. Boyd's field note, which Mr. North quotes: "Yesterday a black gin brought me a pair of most peculiar eggs belonging to a species of *Cracticus*, which the natives call 'Thulgo,' from its note. The male is a noisy, black bird, about the size of *Eudynamis*; the female brown." Again, another correspondent, Mr. W. S. Day, of Cairns, who has shot a number of these birds, wrote: "The female is always brown, and so is the young male; but the old male is black."

Against this field evidence we have Mr. D. Le Souëf's. On the 23rd October, 1894, he found a nest of the Black Butcher Bird, and observed a pair of black birds about the neighbourhood some time before he discovered their nest. Again on Barnard Islands—a limited area, and suitable for observations—he noticed more than a dozen Butcher Birds, all of which were black.

Mr. Broadbent, the discoverer of the bird, says: "I have shot pairs of the black and also of the rufous-coloured bird, but have never observed *quoyi* and *rufescens* together. I may further say, too, that an intermediate stage of plumage has never come under my notice." But I think the strongest evidence of all against the two birds being one lies in the fact that the Black bird is also found in New Guinea, Aru, and other islands; whereas we have never heard of the rufous bird being found out of North Queensland.

SUB-FAMILY—PACHYCEPHALINÆ.

250. FALCUNCULUS FRONTATUS, Latham.—(129)

SHRIKE TIT.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 79

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 173.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882); also Nests and Eggs Australian Birds, pl. i., fig. 129 (1883); Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1146 (1886); North: Austr. Mus. Cat., pl. viii., fig. 9 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Neat, cup-shaped, deep, with somewhat swollen sides, composed of fine strips of bark completely felted all over with whitish-coloured spiders' web, decorated here and there with pieces of greyish-green lichen or pieces of moss, lined inside with fine grass, and usually situated in a slender fork of the topmost branches of a sapling or tree (*Eucalyptus*) in open forest. Dimensions over all, 3 inches by 3½ inches in depth; egg cavity, 2 inches across by 2 inches deep. (See Illustration.)

Eggs.—Clutch, two to three; almost true oval in shape; texture of shell very fine; surface glossy or slightly so; colour, soft white, finely freckled all over, but more thickly with a few blotches added about the apex, with sepia or dark-olive and grey. Dimensions in inches of a proper clutch: (1) .94 × .66, (2) .93 × .65, (3) .93 × .64. (Plate 12.)

Observations.—This sprightly and showy bird, although nowhere numerous, is distributed over the Eastern half of the Continent, but is probably oftener seen in the southern part of that area. A specimen of its eggs which I took in Albert Park about 1866 is among the oldest oological specimens in my collection.

I said the Frontal Shrike Tits were nowhere numerous, but I can recollect when a very small boy, about 1857 or 1858, an irruption of these pretty birds which occurred in the forest to the west of Mount Cotterell, Victoria. As far as I can now remember, the Shrike Tits came in numbers and perched on a brush fence surrounding our dwelling.

Gould records he could neither succeed in procuring the nest of this species nor obtain any authenticated information respecting its nidification, caused, no doubt, by the difficult places—mostly the swaying tops of tall eucalypts, chosen by the birds to build in.

Mr. Geo. E. Shepherd, through his unbounded enthusiasm, has been singularly successful in taking several of the Shrike Tits' nests in the neighbourhood of his nurseries, Somerville. He observed that the female only builds the nest, while the mate sits above her whistling,



NEST OF THE YELLOW-BELLIED SHRIKE TIT

From a Photo by the Author.

and performing the curious office of nipping off all the branchlets above the nest. This we observed in every instance.

I cannot do better than give an extract from a note on these interesting birds kindly furnished me by Mr. Shepherd: "It indeed makes a handsome nest situated among the leaves of the topmost branches of some tall gum sapling where it is very hard to find, and were it not for the male bird piping forth a low, soft, flute-like note on an adjacent limb, would seldom be discovered at all. He sings while the female works hard to build the nest, the male apparently assisting very little, if at all, in the work. He, however, works at shaping the branch above the nest by clipping off the extreme points of the branches, a comparatively easy matter, with his strong bill. This he does during the first few days of nest building, until quite a quantity of small branchlets and leaves strew the ground under the tree. The nest usually takes about two weeks to construct, when the female lays a pair (sometimes three) of beautiful finely spotted eggs. The male bird relieves the female from time to time during the period of incubation, which lasts about 18 or 20 days."

A fine and full set of the eggs of this beautiful bird taken by Mr. Shepherd enrich my collection. Their value is much enhanced by the fact that they were taken early one delightful mid-summer morn (4 a.m., 13th December, 1896) when Mr. Shepherd was assisted by his too indulgent wife, who manœuvred the climbing rope for him on the ground beneath the bending branch.

Dr. Morgan (Adelaide) tells me he once found a Shrike Tit's nest within reach of the ground, in a wattle-tree.

Breeding months September to December or January.

251.—FALCUNCULUS LEUCOGASTER, Gould.—(130)

WHITE-BELLIED SHRIKE TIT.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 80.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 174

Previous Description of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 230 (1865).

Geographical Distribution.—West Australia.

Nest.—Deep, cup-shaped, composed of stringy bark of gum-trees (*Eucalypti*) and lined with fine grasses, the whole matted together externally with cobwebs. A nest Gilbert found was placed among the topmost and weakest perpendicular branches of a *Eucalypt*, at a height of fifty feet (Gould).

Eggs.—Clutch, three; glossy white, with numerous minute speckles of dark-olive, most thickly disposed at the larger end. Dimensions in inches, .87 × .62 (Gould).

Observations.—Although I never enjoyed the opportunity of taking the nest and eggs of this equally handsome western variety, on the 1st November, 1889, I shot a lovely male bird from among some karri saplings at the rear of the stables at Karridale (West Australia). It now adorns our National Museum, Melbourne.

Gilbert took a nest of the White-bellied Shrike Tit during the month of October. He describes the bird as shy, but when breeding, it becomes bolder and more familiar.

252.—*OREOICA CRISTATA*, Lewin.—(131)

BELL BIRD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 81.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 174.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 233 (1865); North: Austr. Mus. Cat. p. 70., pl. 8, fig. 6 (1889).

Geographical Distribution.—Whole of Australia.

Nest.—Somewhat resembles that of the *Collyriocincla*, cup-shaped, deep, composed of strips of bark and leaves, lined inside with fine dried grass, rootlets, &c., and generally placed in a hollow stump, among suckers, between dead, hanging bark and a tree trunk, or if where grass-trees (*Xanthorrhæa*) are numerous, in the fork or amongst the rush-like foliage of that tree. The nest is usually situated low, but sometimes at a height of 20 feet from the ground. Dimensions over all, $4\frac{1}{2}$ inches by 3 inches in depth; egg cavity, 3 inches across by 2 inches deep.

Eggs.—Clutch, three to four, occasionally five; roundish oval in shape; texture of shell fine; surface glossy; colour varies much, but usually bluish-white, sparingly but boldly blotched with sepia or dark-olive (almost black) and grey. Dimensions in inches of a clutch: (1) $1.1 \times .81$, (2) $1.09 \times .82$, (3) $1.03 \times .8$; of a more lengthened set: (1) $1.15 \times .8$, (2) $1.11 \times .8$, (3) $1.12 \times .82$. (Plate 12.)

Observations.—The Bell Bird is commonly distributed over Australia, especially in the more inland and drier portions. I have seen the bird in such places as the Bendigo district, the Wimmera district (Victoria), and Riverina; while I have received eggs from Queensland and North-west Australia.

The Bell Bird is one of the most singular species we possess. It is an accomplished ventriloquist. Some of its notes resemble the ringing tone of a bell, hence its vernacular name. Travellers tell me many times have they been duped, when looking for horses, by following this bird, supposing its call to be the sound from the bells attached to their animals. The usual breeding months are included from August to

November; and according to Mr. North, the late Mr. K. H. Bennett took fresh eggs 19th March, 1887.

From a note I find that Mr. Tom Carter took at Mimilya (W.A.), as early as the 10th August, a nest of the Bell Bird containing five eggs.

Mr. Chas. Barnard (Queensland), has been good enough to send the following field note: "I have lately taken the nests (two) of the Bell Bird (*Oreoica cristata*). I do not know if your attention has ever been drawn to the peculiar habit this bird has of placing caterpillars in and around the nest. We do not often find their nests, but in those we have found there have always been caterpillars; but we never took particular notice as to the number, &c. In a nest taken on the 14th inst. (November, 1897), there were several caterpillars, all of the same species, up to an inch and a-half long, thick, coarse-haired insects, all apparently dead or in a state of torpor, scattered about the nest, some of them on the edge, some on the bottom. In the other nest, taken 21st inst., there were thirteen caterpillars, several dead, lying in the bottom of the nest, and several dead ones on the edge. There were also a few live ones, besides a good many dry, shrivelled up caterpillars, which show that the birds must be constantly putting fresh ones in the nest. Both these nests had nearly fresh eggs; but we have seen caterpillars in nests that were just ready for the eggs. I do not think that they can be put there for food, as I hardly think a bird would eat such a hairy insect. The caterpillars in the last nest were all of the same species except one, and that one of the same species as those in the other nest."

253.—EOPSALTRIA AUSTRALIS, Latham.—(175)

YELLOW-BREASTED SHRIKE ROBIN.

Reference.—Cat Birds Brit. Mus., vol. viii., p. 176

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 294 (1865); Ramsay: Trans. Phil. Soc., N.S. Wales, with plate (1865).

Geographical Distribution.—South Queensland, New South Wales, Victoria and South Australia.

Nest.—Cup-shaped, neat and beautiful in form, constructed of fine twigs, but chiefly bark, with lengthened pieces of outer bark (sometimes two or three inches long) stuck on perpendicularly, outwardly, by means of spiders' web, and further ornamented, especially about the rim, with lichen; lined inside with a few rootlets and pieces of dead, flat, sword-like grass, or with whole small dead leaves of eucalypts, &c. Usually placed low in the slender fork, or on a horizontal branch of a tree in scrub, by creek or in forest. Dimensions over all, $3\frac{1}{2}$ to 4 inches by 3 inches in depth; egg cavity, 2 to $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, two to three; varies in shape from roundish-oval to longish oval; texture of shell fine; surface slightly glossy; colour varies from light greyish-green to bright, bluish-green, spotted and blotched, especially about the apex, with reddish-brown or chestnut and dull purplish-grey. Dimensions in inches of a clutch of round examples: (1) $\cdot 83 \times \cdot 65$, (2) $\cdot 82 \times \cdot 65$, (3) $\cdot 82 \times \cdot 62$; of a pair of long examples: (1) $\cdot 94 \times \cdot 62$, (2) $\cdot 91 \times \cdot 63$. (Plate 12.)

A pair taken in Queensland is smaller in size, light apple-green in colour, somewhat faintly spotted all over with yellowish-brown and dull purplish-brown: (1) $\cdot 78 \times \cdot 59$, (2) $\cdot 74 \times \cdot 61$.

Observations.—Of all our feathered forest friends I know of none more attractive than the confiding and shapely Yellow-breasted Shrike Robin (it has become advisable to use the words Shrike Robin because these birds are not truly Robins*). Enter any quiet sylvan nook or deep gully for a while, and there one of these dear birds will surely detect your presence, and, alighting in a pretty attitude on a twig or clinging sideways to the bark of some tree-stem near, will watch your movements. Their lovely nests, too, as forest ornaments, are extremely beautiful.

In the calm autumn evenings, when darkness is coming down upon the forest, it is pleasant to hear the numerous Yellow Shrike Robins in the timber with chirping hisses, unsettled, or rather settling down for the night.

However, the range of habitat and the varieties of the Yellow Shrike Robin of eastern parts are somewhat perplexing to naturalists. The British Museum Catalogue simply bunches them together, but not without certain qualifications in the shape of carefully selected foot-notes.

This interesting Shrike Robin is at home in nearly all parts of Victoria. Extending its habitat northward, it appears to skip the subtropical scrubs of the Richmond and Clarence districts, where its place is taken by *E. chrysorrhous* (*E. magnirostris*, Ramsay) reappearing in the drier parts of Queensland, notably about the Fitzroy River, where I procured skins in the Brigalow (acacia) scrub.

In Victoria, although the Yellow Shrike Robin especially enjoys the dark dank recesses of the great forest gullies, it may be observed in more open localities, such as in the belts of coastal tea-tree (*Leptospermum*) near the sea. I have taken its nest in the dry scrub of the Bendigo district, and once saw a pair of these birds in some acacia brush on the lower Murray near Echuca.

Naturally some of the Yellow Shrike Robins exhibit great anxiety when a person approaches a nest with young. They go hopping about with measured pace over the ground, at each hop flattening their bodies, while their pretty yellow breasts cleave to the earth. At intervals the wings are partially extended, and all through the acting is the embodiment of painful despair.

Mr. Hermann Lau's poetical allusions to the Yellow Shrike Robin are, "It is early morning, just as the dawn is approaching. Lying half

* The genus *Eopsaltria* is intermediate between the *Pachycephalina* and the *Muscicapina*.



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From a Photo by the Author

awake, half dreaming, in my lonely tent close behind the palm wold of Cooyer scrub, I hear a fine, equal, oft-repeated note in the thicket, as if heralding the golden sun, and which fills my heart with thankfulness to my great Creator. The notes emanate from this dear little bird, which also sings its psalm of praise to its Maker at early dawn (*Eopsaltria*, the bird's generic name, literally means 'Psalm of dawn').

"The Yellow Shrike Robin builds a nest manufactured out of string-like underbark, lined inside with dry grass and a few withered leaves like those of the melaleuca, and usually situated in a three-pronged fork of a small tree. Lays two, rarely three, eggs, and is an early breeder. Cooyer (South Queensland), October, 1883." It is just possible that Mr. Lau's note may refer to the Yellow-rumped variety (*E. chrysorrhous*).

Usual breeding months, September to December or January. In its more northern habitat in mild winters it is said to commence sometimes as early as June. I had through my hands two clutches of eggs taken in Queensland by Mr. W. B. Barnard in July, 1897. Two and probably three broods are reared in a season. Mr. G. E. Shepherd reports the curious occurrence of a double clutch—six eggs in a nest.

In concluding the observations on the common Yellow Shrike Robin, it may be here remarked that the bird figured in Gould (vol. iii., pl. ii.) is referable to the succeeding species (*E. chrysorrhous*), which differs from the common species in having the rump of a bright yellow colour, whereas *E. australis* has the same part dull wax olive. Both sexes are alike except that the male possesses the larger bill.

With reference to Dr. Ramsay's doubtful species (*E. inornata*)* Dr. Gadow is of the opinion that the description is taken apparently from a young or immature bird of *E. australis* (?) obtained at Rockingham Bay. However, Mr. C. W. De Vis of the Queensland Museum says, "The validity of the species has been denied without sufficient cause." Here is an interesting point for field observers to settle.

254.—*EOPSALTRIA CHRYSORRHOUS*, Gould.

E. magnirostris, Ramsay.

YELLOW-RUMPED SHRIKE ROBIN.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 11

Reference.—Ann. and Mag. Nat. Hist. (ser. 4) vol. iv., p. 109.

Previous Description of Eggs.—Campbell: Victorian Naturalist (1898).

Geographical Distribution.—Queensland and New South Wales.

Nest.—Similar in shape and construction to that of *E. australis*, but somewhat larger, and placed on the canes of a lawyer palm (*Calamus*), in dense scrub. Dimensions of egg cavity, $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

* Proc. Zoo. Soc. 1874, p. 604

Eggs.—Clutch, two to three; roundish in form, sometimes oval; texture of shell fine; surface slightly glossy; colour, light greyish-green, minutely spotted and splashed all over, thickest round the apex, with reddish-brown or chestnut and purplish-brown.

Another pair is more oval, light green in colour, and not so minutely spotted, the markings being more blotched in character, and similar to those of the common Yellow Robin, *E. australis*. Dimensions in inches: (1) $\cdot 9 \times \cdot 64$, (2) $\cdot 89 \times \cdot 65$. Of a full clutch: (1) $\cdot 86 \times \cdot 64$, (2) $\cdot 85 \times \cdot 66$, (3) $\cdot 83 \times \cdot 66$.

Observations.—*Eopsaltria chrysorrhous*, or the Yellow-rumped Shrike Robin, is a beautiful and more northern variety of *E. australis*. Gould describes *E. chrysorrhous* as "rather larger than *E. australis* and is similar in colour, except that the rump as well as the breast is of a beautiful jonquil yellow." This is the species figured in the folio edition of "Birds of Australia," vol. iii., pl. ii., and is not the common Yellow Shrike Robin, *E. australis*, so familiarly known to us in southern forests, which has the upper tail coverts dull greenish (wax) yellow, and not bright yellow as in the other variety. However, reference to the British Museum "Catalogue" will show that these birds are bunched as one. Australian workers and field ornithologists, at all events, are hardly prepared to accept that verdict. There are two species undoubtedly.

Gould remarks that "the validity of this species depends upon whether the two sexes are alike in having the rump of a jonquil yellow." This I have proved by obtaining a mated pair, and further proved, as in the case with *E. australis* the male is the possessor of a much larger bill. Therefore, I think, Dr. Ramsay's *E. magirostris* must sink as a synonym. In any case, as the names were published simultaneously, that of the senior authority (Gould) takes precedence.

According to Dr. Ramsay's "Tabular List," his variety *magirostris*, i.e. *chrysorrhous*, is found in the coastal regions of Queensland; but if this species hold good, which it apparently does, the sub-tropical scrubs of New South Wales should be added to its habitat. In the Big Scrub of the Richmond River district, November, 1891, I observed one or two pairs of this bird, and succeeded in finding a nest, which was situated on a lawyer palm (*Calamus*) and contained two eggs. One unfortunately got broken in transit to Melbourne. However, I have since received several sets of eggs from Mr. H. R. Elvery, while my son brought me a pair (male and female) of birds from the same locality.

Mr. Elvery has furnished me with the following interesting field note:—"On the 17th September (1898) I found a nest containing a single egg of this species, time about 4 p.m. I visited the nest at noon on the 19th, expecting to take the usual set of 2, but to my surprise found the nest contained four eggs! The eggs are of two entirely different types—a pair of each type—and remarkably distinct in shape and markings. Evidently the eggs have been laid by two birds. The nest was placed in the usual site—on a lawyer vine in the angle formed

by the intersection of the leaf stalk with the vine, the side of the nest being attached to the vine and the bottom supported by the leaf."

I find from my Cardwell (North Queensland) notes, 1885, that this fine Yellow-rumped variety was noticed in the open forest country near the margin of the scrubs. The only nest observed was incomplete, and was situated in the forked branch of a slender tree, at a height of about eight or ten feet, and overhanging a stream.

According to notes furnished me by Mr. W. B. Barnard, he found a Yellow Robin breeding in the Bloomfield River district (North Queensland) from August to December, which are probably the usual months also for the birds further south in the Big Scrub.

255.—*EOPSALTRIA GEORGIANA*, Quoy and Gaimard.—(176)
E. grisvogularis, Gould.

GREY-BREASTED SHRIKE ROBIN.

Figure -- Gould: Birds of Australia, fol., vol. iii., pl. 12.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 178.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 295 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1145 (1886)

Geographical Distribution.—South and West Australia.

Nest.—Cup-shaped, neat, constructed of bark with pieces placed on perpendicularly, outwardly, with spiders' web; lined inside well with small, dead, flat leaves. Usually situated low, sometimes a foot or two only from the ground, in the fork of a grass or other tree, standing or fallen in the forest. Dimensions over all, $3\frac{1}{2}$ inches by 2 inches in depth; egg cavity, 2 inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, two usually, possibly three occasionally; oval in shape, texture of shell fine; occasionally greenish in colour, like those of the eastern *Eopsaltriæ*, but usually more of a yellowish or ochraceous-buff, obscurely freckled, especially round the apex, with a darker shade of the same colour or yellowish-brown. Dimensions in inches of a clutch: (1) $\cdot84 \times \cdot62$, (2) $\cdot84 \times \cdot61$.

Observations.—In the forests of the beautiful-leaved eucalypt and karri (also a eucalypt) in Western Australia, I was delighted to see the Grey-breasted Shrike Robin—the prototype of our familiar Yellow-breasted Shrike Robin of eastern parts. It takes its vernacular name from its grey breast. Altogether it has not so much yellow about its plumage as the eastern bird, which it in other respects resembles. The nidification is also similar.

The first nest I found was built in the fork of a grass-tree (*Xanthorrhæa*) in open forest (see illustration). The nest contained a single egg. A second nest I discovered contained fledgelings, and was

securely placed near the ground between the green shoots and the bark of a beautiful-leaved eucalypt (locally called red-gum), not three feet from a roadway, where men and cattle passed daily. The pair of eggs in my collection was taken near the same locality, on the last day of October, by some children passing home from school. The birds do not appear to shun human society, for I had a nest pointed out to me which was placed in the fork of a fallen limb near a blacksmith's forge.

Gilbert, who found the Grey-breasted Shrike Robin an abundant species in South-west Australia, says:—"The nest is very difficult to detect, the situation chosen for it being the thickly-wooded gum forests of the mountain districts and the mahogany ('jarrah,' a species of eucalypt) forests of the lowlands. From the forks of the younger of these trees a great portion of the bark generally hangs down in strips, and in the fork the bird usually makes its nest of narrow strips of bark bound together with cob-web, while around the outside a number of dangling pieces are suspended, giving the exact appearance of other forks of the tree; the inside of the nest has no lining other than a few pieces of bark laid across each other, or a single dried leaf large enough to cover the bottom." Eggs of this species, in the collection of Mr. J. W. Mellor, are from Mount Compass, South Australia.

Breeding months September, October and November.

256.—*EOPSALTRIA* (?) *PULVERULENTA*, Bonaparte.
E. leucura, Gould.

WHITE-TAILED SHRIKE ROBIN.

Figure.—Gould: Birds of Australia, fol., supp., pl. 18.

Reference.—Cat. Birds Brit. Mus., vol. viii, p. 180.

Geographical Distribution.—Northern Territory and North Queensland; also New Guinea and Aru Islands.

Nest and Eggs.—Undescribed.

Observations.—With regard to the White-tailed Shrike Robin, Gould writes: "The late John Gilbert was probably the first person who shot this fine species of *Eopsaltria*, of which I have had a mutilated skin, obtained by him at Port Essington, in my possession for the last twenty years. The specimen alluded to is too imperfect for describing or figuring; but I am enabled to supply these desiderata from a few others now before me in the finest state of preservation. Unfortunately nothing is known respecting the *Eopsaltria leucura*, except that it inhabits the great beds of mangroves bordering the coasts of the northern part of Australia (to which, according to Mr. Cockerell, it is confined), that it is very quiet in all its actions, and rather rare in the neighbourhood of Somerset.

"Its nearest ally is the *E. leucogaster (gularis)*, of Western Australia; but it differs from that species in its being of larger size, and in the basal portion of the fine outer tail feathers on each side being white."

However, in the interim between the discovery of this species by poor Gilbert and Gould's description from Mr. Cockerell's specimens, Prince Bonaparte described the bird as *E. pulverulenta*, which name now stands. Nevertheless, the bird, like the *E. gularis*, may not be a true *Eopsaltria*. I think the fact will be proved on the discovery of its nest and eggs, which is being looked forward to with interest.

I had the opportunity of examining several skins of White-tailed Shrike Robins which were obtained at Cape York by Mr. Harry Barnard, season 1896-7.

257.—*HETEROMYIAS CINEREIFRONS*, Ramsay.

FLY ROBIN.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. ii, pl. 15

Reference.—Cat. Birds Brit. Mus., vol. iv., p. 239.

Previous Description of Eggs.—North: Austr. Mus. Cat., app. (1890).

Geographical Distribution.—North Queensland.

Nest.—Open or cup-shaped; composed outwardly of twigs, tendrils and moss, with a few skeleton leaves at the base, lined inside with a mixture of yellowish grass and dark brown or black fibres. Usually situated amongst lawyer palm (*Calamus*) canes. Dimensions over all, $4\frac{1}{2}$ to 5 inches by 2 to 3 inches in depth; egg cavity, $2\frac{1}{2}$ inches by $1\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, one usually, two rarely; oval or roundish oval in form; texture of shell fine; surface glossy; colour, dull yellowish—or greenish—white, blotched and spotted, particularly on the apex, where the markings coalesce or form a patch, with reddish-brown or umber and purplish-brown. Dimensions in inches of single examples: (1) $1.08 \times .72$, (2) $.96 \times .73$. The eggs of the Fly Robin appear to vary much in size. (Plate 12.)

Observations.—This apparently rare and singular bird, half Robin, half Flycatcher, which inhabits portions of the northern scrubs, was described by Dr. Ramsay, 1875, but nothing was known with regard to its nidification till 1889, when Messrs. Cairn and Grant, while collecting for the Australian Museum during September and October of that year, found several nests of this species in the scrubs of the Herberton Tableland. In every instance they were found in the lawyer-palm (*Calamus*) canes about four or five feet from the ground. Some were placed upon interlacing canes, others were at the base of the leaves on their thin, horizontal stems, to which the nest was attached.

In his interesting description of a northern trip, Mr. D. Le Souëf, concerning the Fly Robin, writes: "Near the foot of the range, but still about 800 feet above sea-level, we found several nests of the Ashy-fronted Flycatcher (*Heteromyias cinereifrons*). The bird itself was shy, and on only one occasion did we see one leave her nest, when she was promptly secured. The nests were pretty structures, and all those found were built in young lawyer palms either on or near the crown; only one fresh egg was found in each nest. The birds seemed to choose the thickest patches of undergrowth to build in, and when disturbed darted away among the low bushes, and we did not see one fly into the trees above; they are in consequence difficult to catch sight of. I have watched a pair hunting about for their insect food on the ground among the dead leaves, and at first thought they were Robins of some kind. The habits of the bird, its nest and eggs, all agree far more closely with Robins than with Flycatchers, and I do not know why they should have been called by the latter name."

Breeding months, September to December, or later.

258.—PACHYCEPHALA MELANURA, Gould.—(115)

BLACK-TAILED THICKHEAD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 66.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 185.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 47 (1882); Campbell: Southern Science Record (1883); also Geelong Naturalist (1896); North: Austn. Mus. Cat., pl. 12, fig. 12 (1889).

Geographical Distribution.—Northern Territory, Queensland, also New Guinea, Moluccas, Louisiade Archipelago, New Britain and adjacent islands.

Nest.—Cup-shaped, shallow, rather scanty structure of fine roots and twigs, lined with rootlets and grass, through the bottom of which the eggs can be seen; it is about 3 or 4 inches in diameter by $1\frac{1}{2}$ inches deep (Ramsay).

Eggs.—Two, possibly three occasionally; round oval in shape; texture of shell fine, with a trace of gloss upon the surface; colour, light yellowish-white, with markings, mostly about the upper quarter, of dark-olive or umber, having the appearance of spots and smudges struck on obliquely or in a downward direction; a few grey markings underlie the surface. Dimensions of an average of three examples: .83 x .63 inches.

Observations.—I am very dubious about the wisdom of Dr. Ramsay, after skipping the intermediate localities on his "Tabular List," inserting this extreme northern species into the Dawson River district column.

When in that district I paid especial attention to the Yellow-breasted Thickhead inhabiting the Brigalow (a species of acacia) scrubs where Dr. Ramsay's specimens came from, and could see no appreciable difference (except that it appeared a slightly smaller bird) between the species there found and the common Thickhead (*P. gutturalis*) of elsewhere. However, I bow to Dr. Ramsay's judgment in this matter, and by so doing save reducing by one the number of species in my collection. According to Dr. Sharpe, I fear Mr. Master's *P. robusta* must sink as a synonym in favour of the Black-tailed Thickhead (*P. melanura*).

Mr. Dudley Le Souëf corroborates Dr. Ramsay's statement about the very frail nest built by this variety. During a collecting trip to Coomooboolaroo, September, 1893, Mr. Le Souëf notes: "In a close bush we found the nest and egg of the Black-tailed Thickhead (*P. melanura*), but the structure was so slightly built that the egg was in danger of falling out." On the same station a nest containing three eggs was found at mid-winter (24th June, 1889).

259.—PACHYCEPHALA GUTTURALIS, Latham.—(113)

WHITE-THROATED THICKHEAD.

Reference.—Cat. Birds Brit. Mus., vol. viii, p. 192.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1882).
also Geelong Naturalist (1896); North: Austr. Mus. Cat., p. 64,
pl. 12, fig. 9 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia, also Lord Howe Island.

Nest.—Cup-shaped; composed chiefly of shreds of bark and fine dark-coloured twigs, neatly lined inside with finer twigs, rootlets, and sometimes portions of fine grass, and placed usually a few feet from the ground in a thick bush in a gully, or in a scrub near a stream. Dimensions over all, about 5 inches by $2\frac{1}{2}$ inches in depth; egg cavity, $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three; oval in shape, occasionally roundish oval; texture of shell fine, with glossy surface; colour, yellowish-white, speckled particularly about the upper quarter with spots of dark brown or umber, intermingled with duller markings which appear as if beneath the surface of the shell. In some rare instances the ground colour has a pinkish tint with the markings reddish-brown and dull purple or slate, altogether resembling a Honey-eater type. Dimensions in inches of a proper clutch: (1) $\cdot 91 \times \cdot 68$, (2) $\cdot 9 \times \cdot 67$, (3) $\cdot 9 \times \cdot 68$; of a pinkish set: (1) $\cdot 92 \times \cdot 69$, (2) $\cdot 88 \times \cdot 71$. (Plate 12.)

Observations.—The beautiful White-throated Thickhead is a true scrub or forest-loving bird, its clear, sweet voice being oftener heard amongst the flowering eucalypts than the vocalist itself is seen.

The White-throated and Yellow-breasted Thickheads are a trifle puzzling, but strict attention to the geographical distribution greatly assists the oologist in separating the different species or varieties, of which there are four.

The general or common species (*P. gutturalis*) ranges from Rockingham Bay district, Queensland, round to South Australia, grading into the Black-tailed Thickhead (*P. melanura*) on the one hand at Cape York and Northern Territory, and on the other hand into the Western Thickhead (*P. occidentalis*) of West Australian forests; while an insular form, the Grey-tailed (*P. glaucura*) takes possession of Tasmania and some of the intermediate islands in Bass Strait.

I shall never forget with what enthusiastic delight I discovered my first nest of the White-throated Thickhead. It was the beginning of one November, when "beats the first warm pulse of summer," that I found it in a romantic locality near a clear, singing mountain stream at the foothills of the Dandenongs. The home was placed about breast high in a cosy bush; covering it was a most beautiful male bird, with dark and olive-green coat, while its pure white throat just appeared above the rim of the nest. The pair of eggs was far incubated, making indifferent cabinet specimens, but it was a long time before I allowed myself to remove them from my collection in favour of a better conditioned set. I fear I have been tempted to take too many of these beautiful birds' nests, as the following extracts from my field book show: "Lilydale, 9th October, 1886—Took three nests of White-throated Thickhead, three, two, two eggs respectively." "Ironbark Ranges (Upper Werribee), 11th October, 1890.—Nest of White-throated Thickhead, beautifully constructed of twigs and skeleton leaves, lined with rootlets and placed in a species of thorny acacia in secluded gully." "Upper Werribee, with Messrs. Brittlebank, 8th November, 1890.—Two White-throated Thickheads' nests—one with fresh clutch, 10th November, 1890. Another with three eggs."

One nest I noticed at the Dandenong Creek, near Bayswater, 22nd October, 1898, contained a pretty set of three eggs, which were "shepherded" by a pair of birds both in grey plumage. This prompted my curiosity, not to mention the sweet, solicitous notes of the birds, so I left the home untouched. On visiting the locality about a fortnight afterwards, the same pair of birds was seen in charge, therefore it is evident that the male birds of this *Pachycephala* occasionally breed before they attain their beautiful yellow breasts and pure white throats.

The breeding season is included in the months from September to January.

NOTE.—With reference to the extremely doubtful species, *Pachycephala rufogularis*, founded by Gould on specimens obtained by himself during his explorations in South Australia, I venture to state that they are none other than immature birds of *P. gutturalis*. It does seem remarkable if the species be good that the bird has not been re-discovered since Gould's time. It is true that Dr. Ramsay, at the Linnean Society, New South Wales, on the 25th June, 1884, kindly exhibited on my behalf "a *Pachycephala*," which Dr. Ramsay on his own authority described as "a specimen of *Pachycephala rufogularis*

(Gould) in a remarkable rufescent state of plumage. The whole of the head, fore and hind neck, chest, sides and centre of abdomen, were of a rich rust-red, the interscapular region, rump, wings, coverts and secondaries, washed with the same colour." The specimen was loaned to me by Mr. (now Dr.) D'Ombraïn. Since, I have seen one or two precisely similar birds in the Lilydale district, Victoria, where, fortunately, I was also enabled to trace a clutch of three from the nest. The date was the 7th November, 1886, and the exact locality, scrub adjacent to the Olinda Creek, where I found the happy family, fully fledged, swelling out their nest, with their handsome yellow-breasted parent in attendance. There was an extra solicitous tone in his sweet voice, especially when I commenced to handle and examine the youngsters. On such clear evidence then I am content to expunge *Pachycephala rufogularis* from my list believing it to be the youthful *P. gutturalis*.

However in justice to Dr. Ramsay, I find he states in "Notes and References" to his "Tabular List," that, "*P. gilberti* is a good species, but *P. rufogularis* is very doubtful. Specimens in the British Museum do not appear to belong to either species, although supposed to be *P. rufogularis* (Gould)."

260.—PACHYCEPHALA OCCIDENTALIS, Ramsay.

WESTERN THICKHEAD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 64.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 193.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 208 (1865); Campbell: Proc. Roy. Soc., Victoria, vol. iii., p. 2, pl. 1, fig. 4 (1890); also Geelong Naturalist (1896.)

Geographical Distribution.—Western Australia.

Nest.—The usual cup-shaped form, firmly woven of grass and the soft leaves of plants, apparently plucked when green, and lined inside with fine grass. Dimensions over all, about $3\frac{1}{2}$ inches by $2\frac{3}{4}$ inches in depth; egg cavity, $2\frac{1}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two, probably three occasionally; oval in shape, sometimes elliptical; texture of shell fine, with a trace of gloss upon the surface; colour, light yellowish-white, of a darker shade about the upper quarter, where are spots of umber and dull-grey, the latter appearing as if beneath the surface of the shell. Some examples have the ground-colour more yellowish, as in those of the White-throated Thickhead (*P. gutturalis*), with a great number of markings distributed over the surface. Dimensions in inches of a clutch: (1) $\cdot 98 \times \cdot 63$, (2) $\cdot 97 \times \cdot 63$; odd examples (long) $1\cdot 01 \times \cdot 66$; (short) $\cdot 76 \times \cdot 64$.

Observations.—In Western Australia, in the acacia scrubs protected

by the beautiful-leaved eucalypt (*E. calophylla*), I frequently observed this lovely bird, whose golden breast vied in colour with the acacia's bloom. The male bird stands a perfect lover as he calls "sweet" to his grey-coloured mate in another tree. She answers lovingly in identical note, "sweet."

Gould regarded the Western and Eastern White-throated Thickheads as possibly identical, while Dr. Ramsay in his "Remarks" on his "Tabular List," states: "Finding it necessary to separate the Yellow-breasted *Pachycephala* of Western Australia from that of New South Wales, I embrace the present opportunity of stating my reasons for so doing, and of pointing out the differences between these two species. While lately examining a large series of *Pachycephala* from various parts of Australia, my attention was drawn by Mr. Masters to the deep rufous tint on the under surface of the females of the western examples of the so-called *P. gutturalis*; and after comparing a very large number of specimens from both New South Wales and Western Australia, I have come to the conclusion that, although closely allied, they are specifically distinct. Mr. Gould's description and the plate of the *P. gutturalis* in his work have evidently been taken from western examples, from which the *Turdus gutturalis* of Latham may be easily distinguished."

The nest and eggs of the Western Thickhead above described I took at Karridale, Western Australia, 28th October, 1889. The structure was securely placed amongst the curious seed pods of a hakea branch.

The chief breeding months are September, October, and November.

261.—PACHYCEPHALA GLAUCURA, Gould.—(114)

GREY-TAILED THICKHEAD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 65

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 194

Previous Descriptions of Eggs. Campbell: Southern Science Record (1882) and Nests and Eggs Austr. Birds, pl. i., fig. 114 (1883); also Geelong, Naturalist (1896); North: Austr. Mus. Cat., p. 66 (1899).

Geographical Distribution.—Tasmania and some of the islands in Bass Strait.

Nest.—Larger and more bulky than those of the other Yellow-breasted Thickheads, composed of small twigs, sometimes strips of bark with dead leaves (some skeleton), and casuarina needles added, lined inside with fine dry grass, rootlets, &c., and placed in a bush or low tree in thick scrub. Dimensions over all, 5 or 6 inches by 3 inches in depth; egg cavity, $2\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three, occasionally four; inclined to oval in shape, diminishing in a pretty curve from the upper quarter to the apex, which is, in some instances, sharper than the bottom end of the egg;

texture of shell fine, with surface slightly glossy; colour, light greyish, or light yellowish-white of a darker tone round the upper quarter, where is freckled a zone of small spots of amber and dull slate, the latter colour as usual underlying the surface of the shell. Dimensions in inches of two proper clutches: A (1) 1.02 × .7, (2) 1.01 × .78; B (1) .95 × .69, (2) .93 × .71.

Observations.—I have enjoyed many excursions into the secluded domains—some of them exceedingly romantic—of the Grey-tailed Thickhead of Tasmania and some of the intermediate islands in Bass Strait.

During my brief sojourn in Tasmania, 1883, I was fortunate in finding three nests of this species; the clutches were three, two, and two eggs respectively, all fresh. The nests were taken on the 17th, 18th and 29th October, and were all heavier built than those of the other Thickheads I had been accustomed to find. On the lovely islets of Kent Group, during a visit of the Field Naturalists' Club, we took nests of this species. One bird—a female—we shot had a crossed bill. It was remarkable how the creature could live and enjoy life with such a wry appendage. On a subsequent expedition to the Furneaux Group, when scrambling down one of the granite peaks of Flinders, we took a nest with three eggs in a scrubby nook, being attracted to the locality by the sweet voices of the Thickheads.

With reference to the Grey-tailed Thickhead, a Tasmanian oologist, Mr. A. E. Brent, kindly forwarded me the following memorandum:—“This bird very rarely lays more than three eggs; but I have taken two or three nests containing four eggs. On 7th October, 1893, I took a nest from a low musk tree, in a gully at Austin's Ferry, containing four eggs. I also notice that the earliest laying birds only, or I should say rarely, lay more than two eggs.”

Mr. G. K. Hinsby, another good field observer, found, as a rule, a pair of eggs was laid during poor seasons. The greater number, three, (he never found more), was taken when food was plentiful.

Breeding months, October to December.

262.—PACHYCEPHALA FALCATA, Gould.—(117)

P. pallida, Ramsay.

NORTHERN THICKHEAD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 68.

Reference. Cat. Birds Brit. Mus., vol. viii., p. 205

Previous Descriptions of Eggs.—Le Souëf: Ibis, p. 314 (1896); also Victorian Naturalist, fig. (1896), and vol. xvi., p. 69 (1899).

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland.

Nest.—Cup-shaped, somewhat frail; composed of grass, fine twigs, &c.; inside lined with fine grass. Dimensions over all, $3\frac{1}{2}$ inches by 2 inches in depth; egg cavity, 2 inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, two to three; round oval in form; texture of shell fine; surface glossy; colour, olive, with a belt of markings round the upper quarter of olive and dull, dark-grey. Dimensions in inches of a proper clutch: (1) $\cdot84 \times \cdot65$, (2) $\cdot82 \times \cdot64$, (3) $\cdot82 \times \cdot64$. (Plate 12.)

Similar to those of *P. rufiventris*, but smaller in size and darker in the ground colour.

Observations.—As Gould has pointed out, this species of Thickhead, which inhabits the northern parts of Australia is a beautiful representative of the Rufous-breasted Thickhead of the southern parts of the Continent, from which it differs in its much smaller size, and in the black crescent which bounds the white throat of the male not extending upwards to the ear-coverts, which part, with the lores, is grey. All that Gould mentions of its nidification is that the bird breeds in September and the two following months, and lays two eggs.

Mr. W. White informed me he possessed eggs of this Thickhead; but it was left to Mr. D. Le Souëf to first describe the nest and eggs, collected by Mr. R. Hislop, Northern Queensland, 11th November, 1895. The nest, which I had the opportunity of examining together with the parents which were shot, was found about twelve feet from the ground in a thick bush.

With reference to Dr. Ramsay's species, *P. pallida*, and the species under consideration, that author says: "A large series of birds seems to prove that they are one and the same species. *P. pallida* may be a bleached specimen of *P. falcata*, not well described by Gould."

263.—PACHYCEPHALA RUFIVENTRIS, Latham.—(116)

RUFOUS-BREASTED THICKHEAD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 67.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 208.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 213 (1865); North: Austr. Mus. Cat., p. 67, pl. 12, fig. 11 (1889).

Geographical Distribution.—Australia in general.

Nest.—Cup-shaped, neat, sometimes frail, composed of fine twigs and grasses, with a small admixture of spiders' web, lined inside with brownish wire-like rootlets or fine grass, and usually placed well out of reach in a bushy tree or sapling. Dimensions over all, $3\frac{3}{4}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three, rarely four; inclined to oval in shape, or more pointed at one end; texture of shell fine; surface glossy; colour, pale or dull-olive, with a darker shade round the apex, where is also a belt

of soft olive markings and indistinct grey. Dimensions in inches of a proper clutch: (1) $\cdot 89 \times \cdot 66$, (2) $\cdot 88 \times \cdot 67$, (3) $\cdot 88 \times \cdot 65$.

Observations.—This is probably the commonest Thickhead, and is known in nearly every part of Australia. In any patch of bush, belt of melaleuca, or open forest, its pretty song is sure to be recognised; while there is no egg collection, however small, that does not possess the familiar olive-tinted specimens. I did not, however, find its nest in its extreme western habitat, but found it as far north as the Fitzroy River, where I took a nest 2nd October, 1885, containing the usual complement of three eggs.

In recording his Southern Queensland notes comparing the Rufous-breasted Thickhead with the Yellow-breasted species, Mr. H. Lau says: "This bird (the Rufous-breasted) attaches itself more to open places where thick, fibrous-barked trees, such as the apple tree (*Angophora*), abound, in the hanging branches of which it makes its nest, out of dry grass, lined with fibres, and deposits therein three eggs. (Dalrymple Creek, January, 1864)."

Breeding months, September to January. In Victoria I found the principal months to be October and November.

Mr. C. C. Brittlebank informs me he has taken the egg of the Pallid Cuckoo (*C. pallidus*) from the nest of the Rufous-breasted Thickhead.

264.—PACHYCEPHALA GILBERTI, Gould.—(126)

RED-THROATED THICKHEAD.

Figure—Gould: Birds of Australia, fol., vol. ii., pl. 71.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 210.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd. ser., pl. 19, fig. 5. (1886); North: Austr. Mus. Cat., p. 67, pl. 8, fig. 10. (1889).

Geographical Distribution.—New South Wales, Victoria, South and West Australia.

Nest.—Cup-shaped, deep, constructed of dried grasses, and except being more compactly built is very similar to those of the other members of the genus. Placed in the upright fork of a small shrub about four feet from the ground (Gilbert). A nest found in the Mallee, Victoria, is composed of mallee bark, fine twigs, and dead herbage; inside lined with fine grass. Dimensions over all, $4\frac{1}{2}$ inches by $2\frac{3}{4}$ inches in depth; egg cavity, $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three; nearly oval in shape, in some instances with the apex sharply pointed—a peculiar feature of the eggs of some other members of this genus; texture of shell fine; surface glossy; colour, light yellowish-white, sparingly marked with spots and blotches of olive and dull-grey. Dimensions in inches of a pair: (1) $\cdot 9 \times \cdot 68$, (2) $\cdot 84 \times \cdot 66$.

Observations.—Formerly the Gilbert or Red-throated Thickhead was deemed to be of South and West Australian habitat, but the distribution of the species was discovered to extend further eastward to the Wimmera district, Victoria, where I shot specimens of the bird in 1882, and was presented with specimens of the eggs collected there; while subsequently, according to Mr. North, the late Mr. K. H. Bennett found this bird breeding at Ivanhoe, New South Wales.

Mr. Bennett discovered a pair of Red-throated Thickheads building their home in an extraordinary place—the deserted nest of the Black-throated Butcher Bird (*Cracticus nigrigularis*).

Gould writes:—"Although the practice of naming species after individuals is a means by which the names of men eminent for their scientific attainments may be perpetuated to after ages, I have ever questioned its propriety, and have rarely resorted to it; but in assigning the name of *gilberti* to this interesting bird I feel that I only paid a just compliment to one who most assiduously assisted me in the laborious investigations required for the production of the 'Birds of Australia,' and who was the discoverer of the species."

Gilbert states this bird is an early breeder. He found three newly-hatched young in the middle of August. Therefore the breeding season may be said to extend from that month to the end of the year.

265.—PACHYCEPHALA OLIVACEA, Vigors and Horsfield.—(122)

OLIVE THICKHEAD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 73.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 212.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N S. Wales, vol. vii., p. 47 (1882); Campbell: Southern Science Record (1882); also Nests and Eggs Austn. Birds, pl. i., fig. 122 (1883); North: Austn. Mus. Cat., p. 68, pl. 8, fig. 11 (1889).

Geographical Distribution.—New South Wales, Victoria, South Australia, Tasmania, and islands in Bass Strait.

Nest.—Cup-shaped, comparatively bulky, constructed of strips of bark chiefly and a few twigs; lined inside with grass and leaves sometimes added, and usually placed in the forked branches of small trees—musk, melaleuca, &c., in thick scrub. Dimensions over all, 4 to 5 inches; egg cavity, 3 inches across by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, two to three, rarely four; oval in shape with both ends much pointed, the form being characteristic of that of *P. glaucura* in having the peculiar graceful curve from the shoulder to the apex, which is as sharp or nearly so as the bottom end; texture of shell fine; surface slightly glossy; colour, light yellowish-white, sparingly spotted and blotched with umber and dull-grey, the markings being more

numerous around the apex. Dimensions in inches of a proper clutch: (1) $1.13 \times .79$, (2) $1.13 \times .78$, (3) $1.12 \times .78$; a pair from Kent Group: (1) $1.06 \times .75$, (2) $1.05 \times .75$. (Plate 12.)

Observations.—This Thickhead, of modest garb, may be considered rare on the mainland, but Tasmania and the intermediate islands are its strongholds. During the expeditions of the Field Naturalists' Club of Victoria, frequently alluded to in this work, we either procured the bird or heard its peculiar song on King Island, Deal Island (Kent Group), and Flinders Island (where Gould also saw it), nests being observed in the densest tea-tree (*Melaleuca*) scrub on Deal Island. On that island, on 21st November, 1890, we found one made chiefly of tea-tree (*Melaleuca*) bark and a few twigs, and lined inside with grass. It contained three eggs. Another apparently ready to receive eggs was principally composed of twigs and bark, and lined inside with dry grass blades and dead leaves. Both nests were situated low in tea-tree forks in thick scrub. I subsequently received a nice clutch of eggs from that island, dated January 4th, 1891, collected by Mr. Frank Brown.

In a note forwarded to me, Mr. Brent states:—"On 14th October, 1894, at Glenorchy (Tasmania), I took from a low prickly bush in a dense forest a nest of this rare bird, containing four beautiful eggs. This bird rarely lays more than three, and often only two, but I have had the good fortune to take several nests containing four eggs." To quote Mr. Hinsby's experience in reference to the number of eggs laid by the Olivaceous Thickhead, he says, "Two most frequently, three sometimes."

I have observed the Olivaceous Thickhead as near Melbourne as the Dandenongs, where also Mr. C. French reported a collector of his took a nest October, 1895.

The original description, by Dr. Ramsay, of the fine eggs of this species was taken from specimens in my collection.

Breeding months September to January.

266.—PACHYCEPHALA PENINSULÆ, Hartert.

CAPE YORK THICKHEAD.

Reference.—Ibis, p. 312 (1899).

Geographical Distribution.—North Queensland (Cape York).

Nest and Eggs.—Undescribed.

Observations.—This newly discovered Thickhead, with its pale, whitish-yellow undersurface, is said to closely resemble *P. griseiceps* of New Guinea and adjacent parts.

267.—*PACHYCEPHALA SIMPLEX*, Gould.—(121)

BROWN THICKHEAD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 72

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 219

Geographical Distribution.—Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—Of this northern species we know nothing of its nidification except what is meagrely stated by Gould:—"It appears to breed during the months of December, January and February; for the ovarium of a female killed on the 3rd of the last-mentioned month contained eggs very fully developed, and, from the bare state of the breast, it appeared to have been already engaged in the task of incubation."

268.—*PACHYCEPHALA LANIOIDES*, Gould.—(118)

WHITE-BELLIED THICKHEAD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 69.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 224.

Geographical Distribution.—North-west Australia.

Nest and Eggs.—Undescribed.

Observations.—Gould founded his species of this unique Thickhead on a single male specimen procured on the north-west coast. As in that great naturalist's day, so now, no information whatever has been obtained respecting the habits and nidification of this rare bird. Who will be the first field naturalist to fill up the hiatus?

269.—*PACHYCEPHALA FRETORUM*, De Vis.

LARGE-BILLED THICKHEAD.

Reference.—Proc. Roy. Soc. Q., vol. vi., p. 237.

Geographical Distribution.—North-west Australia and Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—This Thickhead was one of the novelties of the various collections made by Mr. W. Saville-Kent, at Cambridge Gulf, 1888. According to Mr. De Vis, who described the bird, it is similar to *P. lanioides*, but inferior in size.

FAMILY—CERTHIIDÆ.

SUB-FAMILY—CERTHINÆ.

270.—CLIMACTERIS MELANURA, Gould.—(370)

BLACK TREE CREEPER.

Figure—Gould: Birds of Australia, fol., vol. iv., pl. 97.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 334

Previous Description of Eggs.—North: Austn. Mus. Cat., p. 239, pl. 9, fig. 12, (1889).

Geographical Distribution.—North-west Australia, Northern Territory, North and South (probably), New South Wales, and Queensland.

Nest.—Like that of most other members of the genus, built of grasses, feathers, &c., and situated in a hollow tree.

Eggs.—Clutch, two to three; round in form; texture of shell fine; surface slightly glossy; colour, pinkish-white, marked all over, but thickest in the form of a patch round the apex, with rich pinkish-red and purple. Dimensions in inches: (1) $\cdot 92 \times \cdot 7$, (2) $\cdot 88 \times \cdot 74$.

Observations.—Little is known about this northern and interior Tree Creeper, which is said to exceed all the other species in size. The first authenticated eggs of the Black-tailed Tree Creeper were a pair taken by Mr. James Ramsay, of Tyndarie, on the 19th September, 1880, and subsequently described by Mr. North. Surely this is very far south to have obtained this northern species.

Near the junction of the Fitzroy and Margaret Rivers, during the progress of the Calvert Expedition, these birds were often seen or heard, and seven specimens were procured. Their notes and habits closely resemble those of the well-known Brown Tree Creeper. They were very shy and difficult to approach. The adult female is easily distinguished by a white patch on the throat. Mr. Keartland remarks: "Why this bird should be named the Black-tailed Tree Creeper is difficult to understand, when the term Sooty or Black Tree Creeper would be so much more appropriate." I have adopted Mr. Keartland's good suggestion for the vernacular name.

271.—CLIMACTERIS MELANONOTA, Gould.—(369)

BLACK-BACKED TREE CREEPER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 96.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 334.

Geographical Distribution.—Northern Territory and North Queensland.

Nest and Eggs.—Undescribed.

Observations.—This dark-coated northern Tree-creeper is connected with a dark and tragic history, and dearly would I like to be able to describe its eggs and possess them.

Gould, referring to the Black-backed Tree Creeper, records: "For this additional species of the limited genus, *Climacteris*, a form confined to Australia, we are indebted to Dr. Leichhardt's Expedition from Moreton Bay to Port Essington. It was killed in latitude 15°57', south, on the eastern side of the Gulf of Carpentaria, and is rendered particularly interesting to me as being one of the birds procured by poor Gilbert on the day of his lamented death, the 28th June, 1845, which untoward event prevented him from recording any particulars respecting it."

During Leichhardt's great exploring exploit, it is stated that mismanagement was the means of bringing the party into serious trouble, and that at the end of June they were in the midst of broad plains, which it was easy to see were occupied by natives. As a cold wind was blowing one evening they saved themselves the trouble of raising a breakwind in the open, and pitched their camp in a dense thicket, setting, as usual, no watch, because, as Leichhardt believed, the natives would hurt nobody who had done them no harm. They ate their supper and enjoyed a chat round the fire, Gilbert telling some of his travelling adventures, while the two blacks made the night merry with comic songs picked up from the white men of the settlements. Then they retired to rest and all was quiet, when suddenly a shower of spears whizzed in from every side. The assailants were invisible in the scrub, and no guns were left at hand. Leichhardt and the two blacks were sleeping in the open air; they fumbled in the darkness and found a couple of muskets, but no caps were to be had. While Leichhardt was groping for the caps, Gilbert came crawling out through the tent door, and received a spear in the neck. The wound was immediately fatal. The others then crept out with guns ready, but ere the first shot could be fired another volley of spears was received. Six, all barbed, entered the body of Roper, and two pierced the limbs of Calvert. Then the blacks rushed in to finish with their clubs the work of massacre. Roper received a stunning blow on the head, and Calvert three smashing strokes of a waddy; then one of the party, named Murphy, succeeded in firing the first musket shot. A native dropped; his companions stood for a moment as if stupefied; then, carrying off their wounded comrade, they disappeared.

In the morning, Leichhardt buried Gilbert, reading the Church of England service over his grave, and then put his medical skill to use in dressing the wounds of the rest of his party. A river subsequently discovered was named after the lamented naturalist, who, it may be truly said, gave his life in the interests of Australian ornithology, to which he himself had contributed so much original and truthful knowledge.

Although poor Gilbert's day darkened down with awful suddenness, to be buried within the sweet scented shades of a melaleuca grove by that lonely lagoon is a fitting resting-place for one—a hero, for the privations of that terrible journey made all the party heroes—who had performed such rare work in the Australian field.

272.—CLIMACTERIS RUFA, Gould.—(367)

RUFOUS TREE CREEPER.

Figure.—Gould. Birds of Australia, fol., vol. iv. pl. 94

Reference.—Cat. Birds Brit. Mus., vol. viii. p. 335.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 601 (1865)

Geographical Distribution.—South, West, and North-west Australia.

Nest.—Very warm, of soft grasses, the down of flowers and feathers; made in the hollow part of a dead branch, generally so far down that it is almost impossible to reach it (Gilbert).

Eggs.—Clutch, three; roundish in form; texture of shell fine; surface slightly glossy; colour, light purplish-buff, clouded chiefly with dull or light-purple and a few heavier spots and blotches of reddish-brown; however, in some examples the reddish-brown markings predominate. Dimensions in inches of odd examples: (1) $\cdot 92 \times \cdot 73$, (2) $\cdot 88 \times \cdot 72$.

Observations.—This is the western representative of *C. scandens*, to which, as Gould points out, it is closely allied by its robust form and contour, but from which it is readily distinguished by the rufous colouring of the plumage. The Rufous Tree Creeper has been found as far east as the Gawler Range, South Australia.

I have a single example of the egg of the Rufous Tree Creeper, which were taken near Mount Baker, West Australia, 1891, and I have since examined several others.

Gilbert wrote that the nest was difficult to find. One he discovered by observing the Tree Creepers beating away a Wattle Bird that tried to perch near the nesting hole. The nest was fortunately within arm's length, and contained three eggs. This occurred during the first week in October.

Breeding months probably from September to December or January.

273.—CLIMACTERIS LEUCOPHEA, Latham.—(371)
C. pyrrhonota, Gould.

WHITE-THROATED TREE CREEPER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 98.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 337 (*C. scandens*).

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 606 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 51 (1882); North: Austn. Mus. Cat., p. 239, pl. 13, fig. 3 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Cosily built within a hollow limb or tree barrel; composed of bark (string-like), grass and moss, and lined with finer bark and fur or feathers.

Eggs.—Clutch, three, occasionally four; roundish in form; texture of shell fine; surface slightly glossy; colour, white, sparingly blotched about the apex with reddish-brown and purplish-brown; other specimens are more finely speckled, chiefly about the same region, with rich or dark-brown, also with dull-purple. Dimensions in inches of two pairs: A (1) $\cdot 87 \times \cdot 64$, (2) $\cdot 87 \times \cdot 62$; B (1) $\cdot 84 \times \cdot 65$, (2) $\cdot 84 \times \cdot 64$. (Plate 12.)

Observations.—This bird is well-named Tree Creeper, for it rarely takes to the ground, and is essentially a bird of the thick forests of Eastern Australia, where its continuous high piping call "pee-pee-pee" may always be heard. I doubt if it is ever found in the interior as indicated by Dr. Ramsay.

In the case of this Tree Creeper there can be no mistaking its identity, on account of its pure white throat, while the centre of the abdomen is also whitish in colour, the dark coat being greyish-brown, and the wings crossed with buff-coloured bands. Length, $5\frac{3}{4}$ inches; wing, $3\frac{1}{8}$ inches; tail, $2\frac{1}{2}$ inches; bill and tarsus, $\frac{3}{4}$ inch each.

Whether Mr. K. Broadbent refers to this bird or not, he says:—"There is a very distinct variety if not a new species of Tree Creeper which frequents the scrubs, never or seldom appearing in the open, and is characterised by a much darker plumage. This has till now shared in the specific name *leucophea*."*

Although the White-throated Tree Creeper is a fairly plentiful bird, eggs are rare in collections on account of the difficulty in finding its hidden-away nest. Gould, however, had examples, and as far back as 1861 Mr. John Ramsay took a set of two at Macquarie Fields, New South Wales.

* Perhaps this is the slightly smaller and northern race—from Moreton Bay upwards—mentioned in the Brit. Mus. Cat., having a well-pronounced pale grey collar across the fore neck, all the other parts being coloured as in *leucophea*.

The only nest of the White-throated Tree Creeper I found was with the Messrs. Brittlebank. This was discovered under peculiar circumstances in a very secluded gully or ravine on the Upper Werribee. On this occasion we flushed an Owlet Nightjar from a hole not six feet from the ground. By the aid of a tomahawk there was soon revealed three white eggs of the Nightjar, but instead of reposing upon a few leaves or decayed dust of the tree, the clutch was upon a nest composed of soft bark and moss. Removing the white eggs and unfolding a nest cosily lined with rabbit fur, we found the unmistakable egg of the White-throated Tree Creeper. Therefore it was clear that the little nocturnal bird had "jumped" a Tree Creeper's home. Evidently the Tree Creeper had first built her nest within the snug hollow, then the Nightjar entered—unobtrusively, no doubt—and treading down the structure, had deposited her own clutch thereon. Date 11th October, 1890.

Mr. Percy S. Seymour writes:—"I took a nest of the White-throated Tree Creeper, with two fresh eggs, near Dean's Marsh, Victoria, on 23rd November, 1880 (I subsequently received a set of three from the same locality). The nest was discovered on the 4th, but contained no eggs, so I watched it until the bird commenced sitting. The nest was cup-shaped, built of bark, with a very little rabbit fur for lining; it was in a hollow in a small tree (about four feet in diameter) which had been broken off above the nest; the entrance was a very small hole and had to be enlarged to get the eggs out."

A field observer in Gippsland, in asking the interesting question whether all insectivorous birds have a regular track to go every day in search of food, remarks:—"I have seen a Woodpecker (White-throated Tree Creeper) going a regular track every morning and returning every evening for over three months. It was the same fellow, minus a toenail, and I used to watch for him three trees away from our windlass stand every morning. Sure enough he would come along, examining each tree most perfectly, quite as if it was his first appearance, then on to our windlass stand for any fat that might be about the barrel, then off away down the creek, returning about 4 or 5 p.m."

Breeding months September to December.

In reference to the nomenclature of the White-throated Tree Creeper, it has been pointed out that Gould inadvertently transposed its name. According to Temminck's figure and descriptions, the bird figured by Gould as *C. leucophaea* (Latham) is in reality the true *C. scandens* (Temminck). But to alter a mistake that has existed so long and has become accepted by usage would be to make a greater one.

Regarding Gould's *C. pyrrhonota*, with its *rufous* upper tail coverts, there is no doubt now that it is the young of *C. leucophaea*, which has *greyish* upper tail coverts. At first Gould regarded it as *C. leucophaea* in abnormal plumage, but afterwards made it a new species, on the representation of Dr. Ramsay, when submitting a skin. The Doctor subsequently corrected himself by stating in his "Tabular List": "*C. pyrrhonota*, Gould, I find to be only a stage of plumage of *C. leucophaea*."

Mr. A. C. Smart kindly gave me for examination a specimen of the rufous-rumped bird, which he shot at Bass, while Mr. G. E. Shepherd assures me he has frequently watched grey-rumped birds feeding rufous-rumped young ones. By the way he has also seen the female fed on the nest by her mate.

274.—CLIMACTERIS SCANDENS, Temminck.—(366)

BROWN TREE CREEPER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 93.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 336 (*C. leucophaea*)

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 599 (1865); North: Austr. Mus. Cat., p. 237, pl. 12, fig. 7 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Composed of grasses, fur, &c., and placed usually deep down in a hollow branch, tree or stump.

Eggs.—Clutch, two to three, usually the latter number; roundish in form; texture of shell fine; surface slightly glossy; colour, pinkish-buff, almost entirely obscured with pinkish-red and purplish markings. Dimensions in inches of a pair: (1) $\cdot 96 \times \cdot 68$, (2) $\cdot 93 \times \cdot 68$; of a pair from Queensland with markings more blotched in character: (1) $\cdot 91 \times \cdot 72$, (2) $\cdot 88 \times \cdot 71$. (Plate 13.)

These beautiful eggs for the richness of their red colouring most resemble those of the Rufous Song Lark (*Cinchorhamphus rufescens*).

Observations.—The Brown Tree Creeper derives its name from its brownish plumage. When expanded, the wings have a broad band of buff across them. Eyes, bill, and feet are dark-brown. Length, $6\frac{1}{4}$ inches; wing, $3\frac{1}{2}$ inches; tail, $2\frac{3}{4}$ inches; bill $\frac{7}{8}$ inch; tarsus, $\frac{7}{8}$ inch. There are some blackish-brown spots at the base of the throat on the male; these markings are more rufous-coloured on the female.

Although termed a Tree Creeper, this well-known bird spends much of its time on the ground, where, with head erect, it hops quickly over the surface. It is found throughout the greater part of Eastern Australia in the more open forest country. The birds are especially numerous in the box flats of the interior provinces, where their sharp piping whistles are continually heard.

The nests Gould found were entirely composed of opossum fur, which, judging from its freshness, had doubtless been plucked from the living animal while reposing in the hollow trees. The eggs in all the nests he took were only two in number.

When a boy, the first nest I discovered was found by seeing the bird disappear headlong into a stump where the tree had been snapped off,

near the bed of a river. Disturbing the birds and looking in I could perceive far down in the dim light the beautiful red-mottled eggs.

Mr. A. E. Bradly found three eggs August 12th, 1896, also young birds a few days later in the Ararat district, Victoria. In Queensland Mr. W. B. Barnard has found these eggs as early as July.

Breeding months July to January.

275.—CLIMACTERIS ERYTHROPS, Gould.—(368)

RED-BROWED TREE CREEPER.

Figure.—Gould; Birds of Australia, fol. vol. iv., pl. 95.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 338.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 149 (1886); North. Austr. Mus. Cat., pl. 9, fig. 11 (1889).

Geographical Distribution.—South Queensland, New South Wales, and Victoria.

Nest.—Composed of dry grasses, warmly lined with feathers, and usually situated low down in a hollow tree.

Eggs.—Clutch, two to four; inclined to oval in form, or more tapering at one end; texture of shell fine; surface glossy; colour, pinkish-white, decidedly marked with reddish or rufous-brown, also with dull purplish markings. Not unlike a type of those of the Yellow-faced Honeyeater (*Ptilotis chrysops*), only proportionally larger. Dimensions in inches of a pair: (1) $1.0 \times .68$, (2) $.98 \times .67$; of an odd example: $.88 \times .72$.

Observations.—It would be interesting to know if the Red-browed Tree Creeper really ranges across the Continent. Mr. Keartland reports that two birds were shot near Cue, West Australia, but unfortunately they were amongst the treasures abandoned in the desert. Otherwise the bird has a limited range from South Queensland to Victoria.

Gould first obtained this interesting species while camped on the low grassy hills under the Liverpool Range. He pointed out a singular feature in connection with the species, namely, the circumstance of the female alone being adorned with the beautiful radiated rufous markings on the throat, the male having this part quite plain—a reversion of the general law of nature—but a fact he ascertained beyond doubt by dissection of numerous specimens of both sexes.

Although not the first egg taken of the Red-browed Tree Creeper, the late Mr. K. H. Bennett found a pair at Ivanhoe, New South Wales, November, 1885 or 1886, in reference to which Dr. Ramsay says:—"I am indebted to Mr. K. H. Bennett, of Mossgeil, for a fine set of the eggs of this species, the first I have seen; they closely resemble

some of the varieties of those of *Cinclorhamphus rufescens*, but have a *Climacterine* look about them and a smooth shell."

However, there is a decided difference in the eggs of both this species and the White-throated bird (*C. leucophaea*) from those of the rest of the known Tree Creepers.

Mr. Hermann Lau, who took a nest at Warroo, South Queensland, October, 1879, in a MS. note writes:—" *Climacteris erythrops* (Tree Creeper). Like the Yellow Robin of the scrubs, the Tree Creeper in the open forest is the first bird to herald the break of dawn, and to busy itself much in climbing up the stems of trees in search of food. It is by no means a scarce bird, but it becomes a hard task to find the nest, which in all cases is situated in a cracked spout, and through such crack the bird has an entrance, the nest being a foot or two lower down. Eggs four in number."

The breeding season probably includes the months from September to December.

276.—CLIMACTERIS SUPERCILOSA, North.

WHITE-BROWED TREE CREEPER.

Figure—Report Horn Scientific Expedition, Aves, pl. 7.

Reference.—Report Horn Scientific Expedition, Aves, p. 96

Previous Description of Eggs.—North: Report Horn Scientific Expedition, Aves, p. 97 (1896).

Geographical Distribution.—South Queensland, New South Wales, South (probably), Central, and West Australia.

Nest.—Similar to those of the other members of the genus.

Eggs.—Clutch, two (and three probably); roundish in form; texture of shell fine; surface glossy; colour, pinkish-white, mottled all over with pinkish-red and purplish-red. Dimensions of a pair: (1) $\cdot 78 \times \cdot 65$, (2) $\cdot 74 \times \cdot 64$.

Observations.—This Central Australian Tree Creeper is allied to *C. erythrops*, and was discovered by the Horn Expedition.

Mr. A. J. North, who criticised the birds of the Expedition, states:—"Upon examining the reference collection in the Australian Museum, I find there are a male and female of this species, obtained in July, 1883, by the late Mr. Kenric Harold Bennett, on Moolah Station, in the central provinces of New South Wales. The specimens procured by Mr. Keartland at Illara Creek and Bagot's Creek are alike in plumage and are marked respectively male and female, but the examples obtained by Mr. Bennett, at Moolah, and shot together while nesting, vary as above described. There is another specimen in the reference collection from Queensland, marked a female, which is precisely similar to the one from Moolah."

The description I have given of the eggs is from specimens in Mr. Keartland's collection.

Mr. Keartland renewed this bird's acquaintance near Lake Augusta, West Australia, when a mated pair was shot. On splitting a log from whence one of them flew, a nest nearly ready for eggs was discovered.

SUB-FAMILY—SITTINÆ.

277.—*SITTELLA CHRYSOPTERA*, Latham.—(373)

ORANGE-WINGED TREE RUNNER.

Figure.—Gould: Birds of Australia, fol. vol. iv., pl. 101.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 360.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883): also Nest and Eggs Australian Birds, pl. i, fig. 373 (1883): North Austr. Mus. Cat., p. 240 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Small, neat, open, upright, with sharply edged rim; composed almost entirely of spiders' webs and cocoons, which give the structure an elastic tendency; outwardly coated with small shields of greyish bark, assimilating the appearance of the fork in which the nest is placed; inside deep, lined with soft bark and cocoons; usually situated in a forked, dead branch, but sometimes on a living limb, near the top of a tree. Dimensions over all, $2\frac{1}{2}$ inches by about $2\frac{1}{2}$ inches in depth to the prong of the branch; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{8}$ inch deep.

Eggs.—Clutch, three to four, mostly three; roundish in shape, or sharply compressed at one end; texture of shell fine; surface glossy; colour, greyish-white, boldly spotted and blotched with olive and slate. Dimensions in inches of a pair: (1) $.7 \times .53$, (2) $.68 \times .54$. (Plate 13.)

Observations.—It is interesting to note, as Gould has pointed out, that the genus *Sittella* contains the Australian representatives of the Nuthatches of the northern part of the Old and New World. One sees the family likeness in the pert little Sittellas. This bird's bill is well adapted for its work, being nearly as fine as a needle at the point, and very slightly upturned. Its coat is greyish, with a striped appearance derived from a dark-brown streak down each feather, under-surface light-grey, while it receives its vernacular name from the broad patch of rich rufous or orange across each wing. These orange-coloured patches are most conspicuously seen when the bird darts from tree to tree.

The true home of the Orange-winged Sittella or Tree Runner is Eastern Australia, where it is not uncommon. It is a lover, of course,

of forested tracts; and of this lively and most interesting bird it is odd that Gould had no information in particular of its nidification to publish.*

The nest is a most singular construction and a masterpiece of deception, so felted exteriorly with pieces of bark as to represent a portion of the branch or fork where it is placed. The deception is also carried on within, for the greyish-coloured eggs are a reflex of the colouration of the nest and surroundings. I possess several of these nidiological curiosities in my collection; one in particular is suggestive of civilisation, inasmuch as the inside contains small pieces of printed newspaper. It would be well to encourage the little birds near civilisation, for they destroy the larvæ of the codlin moth.

It appears that more than a pair of birds aid in the construction of a nest—a kind of family affair. Mr. C. C. Brittlebank paid particular attention to this, and observed four birds building one nest and three another. He also observed that as the young grow in the nest the side of the nest splits or is trampled down, leaving the clustered youngsters resting upon the base only. Two nests taken season 1893 each contained three eggs. Another season Mr. Brittlebank watched the young Tree Runners being fed by four birds (Tree Runners) other than the supposed parents. The month was February. Another proof of this family affair is from Mr. W. P. Best, Branzholme, who in writing to me first mentioned the subject. He says:—"In November last year (1887) I found an Orange-winged *Sittella*'s nest with young. Six birds were feeding them; I shot two, and they proved to be females which did not appear to have laid that season. This is the only instance of a like nature that has come under my notice. I have found other nests, but only a pair of birds has been visible. I saw the six birds flying to and from the nest, and watched it carefully for some time to make sure I was not mistaken. A storm blew down the tree before the young were fully fledged, so I could not complete my observations."

Breeding months September to January.

I once watched a party of these Tree Runners near Ringwood, hawking in the air for insects. The birds were in a small tree close to me, running along the branches, some descending head downwards. Every now and then a pretty bird would gracefully launch into mid-air and poise on its fluttering orange-patched wings in the centre of a revolving bunch of gnat-like insects. The many audible cracks from the tiny bill testified how quickly the prey was being captured. As the bird returned to the tree, another would take its place among the crowded insects.

* However he gives a beautiful figure of a *Sittella*'s nest. There is also a good engraving of a beautiful nest and egg of the Orange-winged *Sittella* in Dr. Bennett's work, "Gatherings of a Naturalist in Australia."

278.—*SITTELLA LEUCOCEPHALA*, Gould.—(374)

WHITE-HEADED TREE RUNNER.

Figure—Gould: Birds of Australia, fol. iv, pl. 102

Reference—Cat. Birds Brit. Mus., vol. viii., p. 361

Previous Descriptions of Eggs. Campbell: Victorian Naturalist (1886);
id. Southern Science Record (1886); North: Austr. Mus. Cat.,
p. 242 (1889).

Geographical Distribution.—South Queensland and New South Wales.

Nest.—Neat, small, open, upright; composed of spiders' webs and cocoons, covered outwardly with small pieces of greyish bark placed parallel with and resembling the figure of the bark of the branch holding the nest—altogether a wonderful piece of mimicry both as regards colour and form of the nest; inside deep and lined with soft bark, spider and other insect cocoons. Usually situated in an upright, dead, forked branch near the top of a tree. The nest has an elastic tendency, and when removed from its resting-place readily contracts. Dimensions over all, $2\frac{1}{4}$ inches by $2\frac{1}{2}$ inches in depth (or to the prong of the branch); egg cavity, $1\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three; roundish in form; texture of shell fine; surface glossy; colour, greyish-white, boldly blotched and spotted with sepia and slate. The eggs of the various species of *Sittella* are almost inseparable from each other as far as appearance goes. But the eggs of the White-headed bird are slightly smaller than those of the southern forms. Dimensions in inches of a proper pair: (1) $\cdot63 \times \cdot51$ (2) $\cdot62 \times \cdot5$.

Observations.—This sprightly *Sittella* is at home in the more inland portions of Southern Queensland, but it also frequents the northern parts of New South Wales. It is readily separated from its southern congeners by the pure white colouring of the head, hence its appropriate vernacular name; but the Pied Tree Runner has also a white head.

During my brief sojourn at Coomooboolaroo (Q.), October, 1885, most unfortunately I found the country suffering from the visitation of a disastrous drought. The cattle dead and dying on the station had a depressing effect on a stranger's feelings. What must it have been to the owners, Mr. George Barnard and his sons? As a matter of course, and although the breeding season for birds had fairly commenced, numerous species had not laid. Nothing has such a retarding tendency on the breeding instincts of birds as a droughty season.

However, strolling alone one day on the margin of a dry Brigalow scrub, I noticed some White-headed Tree Runners attentively examining or working at what appeared to be a notch on a dead topmost branch. This notch on closer inspection I found to be a nest which the little birds were constructing. This was encouraging, for the nest and eggs of this species had not yet been described. A further search in another direction discovered a second nest also in the course of construction. I left

the nests as long as I could, even to the day before I left Coomooboolaroo (9th October), when Mr. Harry Barnard kindly ascended the trees and secured me the prizes—a pair of eggs from each nest. Great difficulty attended the taking of one nest, which was in an upright fork of a dead limb. This branch had to be sawn through and lowered gradually till it reached my hands below. Subsequently I made a photograph of it. (See illustration). These finds were reported to and duly recorded by the Field Naturalists' Club of Victoria.

Subsequently (1889) Mr. North independently described the eggs of the White-headed *Sittella* from the same locality, and was indebted, as he states, to the late Mr. Geo. Barnard for the same.

Breeding season, chiefly the months of September, October and November.

279.—*SITTELLA ALBATA*, Ramsay.

PIED TREE RUNNER.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 28

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 362.

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—The Pied Tree Runner can hardly be distinguished from the White-headed variety, for, as Gould mentions, the white spots of the quills (instead of reddish ones as in the *S. leucocephala*) are only seen by spreading the wing.

Mr. Waller, when skinning what he supposed to be *S. leucocephala*, noticed the white spots on the under side of the quills, and as he did not remember seeing them in that species before he drew Dr. Ramsay's attention to the difference. The result was that Dr. Ramsay re-examined his series and found other examples which he described as *S. albata*.

280.—*SITTELLA PILEATA*, Gould.—(376)

BLACK-CAPPED TREE RUNNER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 104

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 362.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i. p. 612 (1865); Lucas: Victorian Naturalist (1884); North: Proc. Linn. Soc., N.S. Wales, vol. ii, 2nd. ser., p. 409 (1887).

Geographical Distribution.—New South Wales, Victoria, South West, and North-west (?) Australia.



NEST OF THE WHITE-HEADED TREE RUNNER.

From a Photo by the Author.

Nest.—Similar to that of *Sittella chrysoptera*; beautifully wrought, almost entirely of webs and spiders' cocoons, coated outwardly with small shields of greyish outer bark which assimilate the particular colour of the branch supporting the nest; frequently the rim is decorated with fine pieces of lichen; inside lined with cocoons, white or greenish in colour. Usual situation in a fork of a dead branch of a eucalypt, melaleuca or other tree. Dimensions over all, $2\frac{1}{4}$ inches by $2\frac{1}{2}$ inches in depth (*i.e.* from the top to the prong of the branch); egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, three usually, four occasionally, one rare instance of seven (probably a combination clutch); roundish in form, or sharply compressed at one end; texture of shell fine; surface glossy; colour, greyish-white, boldly blotched and spotted with dark olive or sepia and slate. Dimensions in inches of a pair: (1) $\cdot 7 \times \cdot 57$, (2) $\cdot 7 \times \cdot 55$.

Observations.—This splendid little Tree Runner inhabits Southern Australia, from the Mallee and drier tracts of Victoria, in the east, where I have seen the bird, to Western Australia.

Although this active creature is well named Black-capped, it may be remembered that the male alone possesses the black cap, while the whole of the head of the female is black.

Respecting this species, Gould gives a very truthful field note from his journal:—"I met with a flock of these birds on the hills near the source of the River Torrens, about forty miles northward of Adelaide; they were about thirty in number, and were extremely shy, keeping the topmost branches of the trees, and the whole company flying from tree to tree so quickly that I and my companion were kept at a full run to get shots at them."

Gilbert, through Gould on the authority of Mr. Johnson Drummond, gives a very good description of the nest in Western Australia, where the tiny structure is usually placed in the highest and most slender fork of an acacia, and, as is usually the case, is most difficult to detect from its diminutive size and from its resemblance to an excrescence of wood.

Examples of the nests and eggs of the Black-capped Tree Runner in my collection were kindly forwarded by Mr. James G. Macdougall, South Australia. He also sent me a note, part of which is most extraordinary, regarding the nidification of the bird.

Writing from Yorke Peninsula, Mr. Macdougall says:—" *Sittella pileata* builds a most exquisite nest of wool, hair, and lichens, against the side of a branch or in a fork. The eggs are usually three in number. I took four eggs 28th August; seven eggs 13th November. In the latter case the nest was of the usual size, but two hens sat side by side on it covering the seven eggs, some of which lay on the top of the others. Before I had descended the tree the birds were sitting together again on the empty nest."

The "family affair," mentioned in connection with the Orange-winged *Sittella*, seems to be extended to the Black-capped species, and as observations go on may be found to extend to all the other members

of this interesting genus. But in the case of the Black-capped two birds actually laid in the one nest and were incubating together. I do not recollect another similar incident among all the birds of Australia.

Mr. Macdougall again writes:—"The nests of *Sittella pileata* are so ingeniously hidden that they are rarely found. I had the good fortune this year (1886) to find two by watching the birds. The first was in a tea-tree (*Melaleuca ericifolia*), which kind, with she-oaks (*Casuarina*), form our scrub. Found 7th October. The second nest was found 21st October. I took the four eggs, as you desired the whole clutch. Yesterday I sawed the nest down and sent it likewise."

During a trip to the Wimmera district, September, 1899, I noticed three adult Black-capped Tree Runners feeding three young birds in a nest built in a bull-oak.

Breeding season end of August to November or December.

281.—SITTELLA TENUIROSTRIS, Gould.

SLENDER-BILLED TREE RUNNER.

Reference.—Cat. Birds Brit. Mus., vol. viii., p. 363.

Previous Description of Eggs.—Ramsay: Proc. Linn Soc., N.S. Wales, vol. i., 2nd ser., p. 1149 (1886).

Geographical Distribution.—New South Wales and South Australia.

Nest.—A very beautiful structure, placed often between the upright forks of a dead branch; it is very deep, open above, the edges sharp, not rounded, and composed of fine shreds of bark, lichens, and cob-web, the outside felted or "shingled" with small scales of bark fastened on with cob-webs, and made to resemble the sides of the forked branch between which it is placed, so that detection is most difficult; the interior is usually lined with "mouse-eared" lichen, which the colour of the eggs closely resembles (Ramsay).

Eggs.—Clutch three, seldom four; colour, delicate greenish-white, with dots and confluent irregular markings of slaty-lilac and slate-black, the lilac freckles appearing beneath the shell, in some forming a zone of larger spots near the thicker end, in others the spots are nearly evenly dispersed over the whole surface. Dimensions in inches: (1) $\cdot 68 \times \cdot 55$, (2) $\cdot 66 \times \cdot 53$, (3) $\cdot 63 \times \cdot 55$, (4) $\cdot 62 \times \cdot 52$ (Ramsay).

Observations.—This somewhat "Slender" species, so far as is known, is restricted to the interior, where it probably takes the place of the Orange-winged Tree Runner.

Gould records:—"I possess a somewhat mutilated specimen of *Sittella* which was given me by Captain Sturt, but I am unaware of the locality in which it was obtained. This bird, which I feel assured is a new species, is very nearly allied to *S. chrysoptera*, but differs from it

in having a longer and more upturned bill, the base of which is yellow, and a uniformly-coloured back and breast without apparently any trace of the brown stræ seen on the feathers of those parts in *S. chrysoptera*; in other respects, particularly in the chestnut-coloured band across the wings, it is very similar to that species. If it should hereafter prove to be new, I would propose for it the specific name of *tenuirostris*."

Regarding the Slender-billed Tree Runner, Dr. Ramsay states:—"This is a somewhat doubtful species, and Dr. Hans Gadow, who has presumably examined the type from Gould's collection, has made it still more doubtful by placing it as identical with *S. pileata* (Gould). . . . As I have specimens agreeing very well with Mr. Gould's description, from the interior provinces, obtained by Mr. James Ramsay, I prefer to consider it more nearly allied to *S. chrysoptera* than to any other." The length of the bill is .7 inch.

282.—SITTELLA LEUCOPTERA, Gould.—(375)

WHITE-WINGED TREE RUNNER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 103

Reference.—Cat. Birds Brit Mus., vol. viii., p. 363.

Geographical Distribution.—North-west Australia and Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—The White-winged Tree Runner is a native of northern parts of the Continent, and may be taken as a splendid representative of the better-known Orange-winged species of more southern forest tracts.

283.—SITTELLA STRIATA, Gould.

STRIATED TREE RUNNER.

Figure.—Gould: Birds of Australia, fol., supp., pl. 54.

Reference.—Cat. Birds Brit Mus., vol. viii., p. 364.

Previous Descriptions of Eggs.—Le Souëf: Ibis, p. 314 (1896); also Victorian Naturalist, fig. (1896).

Geographical Distribution.—Northern Territory and Queensland.

Nest.—Very similar to that of other members of the genus; chiefly composed of cob-webs, coated outwardly with pieces of bark, and placed in the forked branch of a tree. Dimensions over all, 2 inches by 3 inches deep; egg cavity, 1½ inches across by 1½ inches deep (Le Souëf).

Eggs.—Clutch, three; inclined to oval in shape; texture of shell fine; surface glossy; colour, pearly or bluish-white, blotched, chiefly about the upper quarter, with sepia and slate. Dimensions of the type clutch: (1) $\cdot 7 \times \cdot 53$, (2) $\cdot 7 \times \cdot 52$, (3) $\cdot 69 \times \cdot 51$.

Observations.—This fine northern species was first collected by Mr. Cockerell on the Cape York Peninsula. The well-defined black head of some of the birds suggests that they are the males, but the point has to be settled. Black-headed Tree Runner might have been a more appropriate name for the species.

Mr. Dudley Le Souëf first brought to scientific light a beautiful nest and three eggs of the Striated Sittella, which were found by Mr. R. Hislop, in the Bloomfield River district, Northern Queensland. The nest was built between the upright fork of a eucalyptus branch, and, as is usually the case with the nests of this family of birds, was exceedingly difficult to detect.

FAMILY—NECTARINIIDÆ: SUN BIRDS.

284.—CINNYRIS FRENATA, Muller.—(359)

SUN BIRD.

Figure.—Gould. Birds of Australia, fol. supp., pl. 45.

Reference.—Cat Birds Brit. Mus., vol. ix., p. 85.

Previous Descriptions of Eggs.—Ramsay: Ibis, vol. i., new ser., (1865); Gould: Birds of Australia, fol., supp. (1869); Campbell: Southern Science Record (1883); North: Austr. Mus. Cat., app. (1890).

Geographical Distribution.—North Queensland and New Guinea; also Papuan Islands, Moluccas and Celebes.

Nest.—Long, oval, with a well defined tail and side entrance, sometimes hooded; composed of pieces and shreds of bark (melaleuca chiefly) or fibre-like portions of dead leaves and spiders' cocoons well matted together, and coated outwardly with strings of the droppings of wood-eating insects or caterpillars, the tail being composed chiefly of the strings of droppings, which are hung together by means of cob-web; inside well lined with a whitish downy substance; usually suspended to a twig or foliage of a bush or low tree. Dimensions: body 7 inches long, tail varying from 2 to 5 inches additional; broadest part $2\frac{1}{2}$ inches; entrance, which is about the centre of the body of the nest or 3 inches from the top, $\frac{2}{3}$ inch across.

Eggs.—Clutch, two; lengthened in form, tapering towards one end; texture very fine; surface has slight trace of gloss; colour, light greenish-grey, blotched or mottled all over (in some examples so closely as to almost hide the ground-colour), thickest on the larger end, with

umber. Dimensions in inches of two clutches: A (1) $\cdot 66 \times \cdot 45$, (2) $\cdot 65 \times \cdot 46$; B (1) $\cdot 64 \times \cdot 45$, (2) $\cdot 6 \times \cdot 45$. (Plate 13.)

Observations.—Of this intertropical and truly beautiful genus we possess a single species in the figure of the Australian Sun Bird, which has a somewhat restricted range, as far as the mainland is concerned, along the coastal region of Northern Queensland. It is also found in New Guinea and in other islands beyond.

I saw Sun Birds flying about the private gardens of Townsville, and shall never forget how pretty they appeared, in plumage of olive-green and canary-yellow, with a throat of shining steel-blue intensified into flashing brilliancy at certain angles of sunlight like the iridescent feathers of a Humming Bird, when seen clinging to the whitish wax-like flowers of the papaw-tree and probing each with their long slender bills. We also found these birds investigating the red flowers of the mangroves upon the islands, where we obtained several skins. We proved that the female is destitute of the brilliant markings upon the throat. The bird's full length is only about four inches, including its bill, which is nearly an inch long.

The exquisite little creatures are indeed well named "Sun" Birds, because at noon, when the tropical sun is vertical in the heavens, they fly about seemingly in ecstasies of delight uttering their peculiar "tsec-tsec" song.

Macgillivray, who first found the nest of the Sun Bird, furnished Gould with the following extracts from his note book:—"November 29th, 1849, Cape York. Found two nests of *Nectarinia* to-day, one on the margin of the scrub, the other in a clearing. The nests were pensile, and in both cases were attached to the twigs of a prickly bush,—one, measuring seven inches in length, was of an elongated shape, with rather a large opening on one side close to the top; it was composed of shreds of melaleuca bark, a few dry leaves, various fibrous substances, rejectamenta of caterpillars, &c., and lined with the silky cotton of the *Bombar australis*. The other, which was similar in structure, contained a young bird and an egg with a chick almost ready for hatching. The female was seen approaching with a mouthful of flies to feed the young. The egg was pear-shaped, generally and equally mottled with obscure dirty brown on a greenish-grey ground."

"December 4th. Mount Ernest, Torres Strait. A nest of *Nectarinia* found to-day differs from those seen at Cape York in having over the entrance a projecting fringe-like hood composed of the panicles of a delicate grass-like plant. It contained two young birds, and I saw the mother visit them twice with an interval of ten minutes between; she glanced past like an arrow, perched on the nest at once, clinging to the lower side of the entrance, and looking round very watchfully for a few seconds before feeding the young, after which she disappeared as suddenly as she had arrived."

In the "Ibis" (1865), Dr. Ramsay described a similar nest collected by Mr. Rainbird in the Port Denison district, the southern limit of the Sun Bird; Mr. Rainbird had, however, to leave before the eggs were laid.

On Ross Island (Townsville), 16th September, 1885, I found a pair of birds building a nest suspended about three or four feet from the ground in a mangrove bush. The structure appeared nearly complete, but although I watched it for five days till I left the locality, no eggs were laid; therefore, like Mr. Rainbird, I had to leave without the precious specimens.

The beautiful little Sun Bird seems to love the vicinity of human habitations: I learnt during my visit to Cardwell that a bird had built in the verandah of a dwelling in that township, hanging its nest from some creepers. Mr. K. Broadbent also mentions the confiding and fearless disposition of the Sun Birds in nesting in gardens about that township.

In the Catalogue of the Australian Museum similar interesting instances are recorded. Mr. Boyd, Herbert River district, writing under date 31st December, 1889, therein states:—"We have on the estate three houses with verandahs, and in each verandah a pair of Sun Birds have built; it is strange why this little bird should seek mau's society; one pair has bred for years in a verandah nearly always occupied by three children and four kangaroo dogs. One pair that for the last two seasons has built by the side of the house came round to the front door on the 23rd November and selected a piece of rope that pulled up the bamboo verandah blind and began building. I at once nailed the rope so that it could not be moved, and have since kept them under observation. Their first proceeding was to cover the cord for about eighteen inches with a layer of bark, cob-webs, moss, &c., until it was about two inches in thickness; on the 28th the bottom of the nest and the little verandah were begun, and with the sides were almost completed the following day. On the 5th December I saw the female on the nest; on the 17th I looked in the nest and saw two eggs; on the 21st there were young ones."

Mr. Boyd would have added much to the value of this interesting note had he recorded the exact dates the two eggs were deposited, also the duration of incubation. He subsequently stated that the young left the nest on the 4th January, or forty-three days from the date of the commencement of the nest.

The eggs of the delightful little Sun Bird in my collection are from the Bloomfield River district, where Mr. D. Le Souëf found several nests. One was built within two feet of his bed-room door, and young reared therein during his visit. On a later trip Mr. Le Souëf observed at Toolgoor a nest with two entrances which was built in a shed. Somehow the cord which held the structure turned so that the opening faced a grating fence near. As the birds when sitting could not see about them or when any danger approached, and were unable to turn the nests, they made another opening on the opposite side.

Breeding months September to January.

FAMILY—MELIPHAGIDÆ. HONEYEATERS.

SUB-FAMILY—ZOSTEROPINÆ.

285.—ZOSTEROPS CÆRULESCENS, Latham.—(360)

WHITE EYE.

Figure—Gould: Birds of Australia, fol., vol. iv., pl. 81

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 152

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 588 (1865); Potts; Trans. New Zealand Inst., vol. ii., p. 61 (1870); Buller: Birds of New Zealand, vol. i., p. 83 (1888); North: Austr. Mus. Cat., p. 233 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, South Australia and Tasmania (including islands in Bass Strait), also New Zealand, Chatham Islands, Fiji, New Hebrides, and New Caledonia.

Nest.—Cup-shaped, neat, but somewhat slight; composed of fine grass, matted outwardly with cocoons (green and white coloured), occasionally green moss is added; inside lined with very fine grass and a few rootlets (an example from Tasmania is entirely lined with long horse-hairs); suspended by the rim in any convenient thick bush or low tree, such as prickly acacia, coastal tea-tree (*Leptospermum*), &c. Dimensions over all, $2\frac{3}{4}$ to 3 inches by 2 to $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{3}{4}$ to 2 inches across by $1\frac{1}{4}$ to $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three to four; roundish oval in form; texture very fine; surface slightly glossy; colour, uniform, light, bluish-green. Dimensions in inches of a full clutch: (1) $\cdot66 \times \cdot5$, (2) $\cdot65 \times \cdot5$, (3) $\cdot65 \times \cdot49$, (4) $\cdot64 \times \cdot48$. (Plate 13.)

Observations.—Though an orchard pest, the little White Eye is a very interesting species, while its small shapely nest, with its beautiful bluish-green eggs, are amongst the models of nidiology.

The geographical range of the White Eye extends throughout Eastern Australia, Tasmania, New Zealand, and other islands in the Pacific. It was only in later years, or since 1856, that it became a permanent resident in New Zealand, the bird, it is supposed, having migrated from Australia. This unique migration on the part of the White Eyes has not been satisfactorily accounted for. That eminent authority on New Zealand ornithology, Sir Walter Buller, contends that the White Eye is really indigenous to the South Island. But I venture to say that the evidence is against Sir Walter's theory, his great legal mind notwithstanding. How is it that so many authentic field observers on both islands only noted the bird for the first time during the winter of 1856? Why, the Maories themselves call the bird "Tau-hou" which means "stranger." The interesting note quoted by Sir Walter Buller, of the White Eye having been seen 300 miles north of New Zealand, flying about a ship, while several others passed over, heading northwards, proves

that the instinct of a former northern inheritance was strong in the birds, and that they may have been endeavouring to reach it.

Mr. Travers invents the ingenious theory that the original White Eyes came to New Zealand after the memorable "Black Thursday," which occurred in Australia, 1851.

I have observed on the mainland that the White Eyes have migratory tendencies, although I have seen them in Victoria at all seasons. Gould regarded it as a stationary species. I have found their pretty nests in the coastal scrubs during summer; while in winter the birds in small companies are frequently seen darting about our gardens, where they are specially fond of the heating berries of the pepper-tree (*Schinus*). When threading the branches, feeding, a bird occasionally utters a soft, sweet, chattering warble, as if singing inwardly, or to itself. The well-known call or alarm note is a short, feeble, whistle-like sound, often repeated.

While mentioning pepper-trees, I may mention that my son Archib was once watching White Eyes feeding in our tree, when a Sparrow (introduced) intruded. One of the White Eyes, with its sharp little beak, made a lunge at the Sparrow, piercing it to the heart, so that it immediately fell dead beneath and was brought to me for examination.

Owing, no doubt, to the bird's familiar disposition, it does not shun the presence of man, and has been found nesting in bushes bordering well frequented paths in gardens, both public and private. My friend Mr. Ed. D'Ombraïn presented me with three White Eyes which he trapped in his garden. They are fed on ground sweet biscuit and fruit, and are now thriving in the aviary with a pair of canaries. Occasionally the canaries have been observed feeding their native brethren. Mr. D'Ombraïn tells me he heard from a relation in England, lately, who saw exhibited in a bird show, a pair of Zosterops ticketed "Australian Spectacle Birds. Price £5."

I said that the White Eye was an orchard pest; but the late Mr. T. H. Potts puts its case very nicely when he wrote, "The White Eye or Blight (eating) Bird, with cheerful note, in crowded flocks, sweeps over the face of the country, and its progress clears away multitudes of small insect pests that persistently beset a great variety of cultivated plants and trees. It is true that in spring-time it insists in taking boldly and openly its retaining fee for its services, probing with its needle beak the luscious pulp of cherries that hang most temptingly in clustering ripeness, red and purple. The fruit grower may not just *then* like to admit the claims of the White Eye, deeming it an inconvenient time for that kind of visitation; but we believe the little worker has honestly earned his wages." Mr. Potts observes that incubation in the case of the White Eye lasts about ten days; another ten days sees the young fledged.

Although a considerable variety of material is used for nest-building, moss, grass, and hair predominate. One beautiful example I received from a thoughtful friend who was photographing in the Apollo Bay district was so curiously furnished with long white hairs that the straggling ends projected from every part of the structure. Many of the hairs were a foot in length, while one measured 19 inches.



NEST OF THE WHITE-EYE (ZOSTEROPS).

From a Photo by the Author.



NEST OF THE YELLOW-FACED HONEY-EATER

From a Photo by the Author.

It would appear that the little *Zosterops* wanders occasionally inland. I find by my notes that on 5th October, 1880, I took a nest with eggs in the Whipstick Scrub, Bendigo district; and on 9th November, 1882, observed another nest with its pretty blue eggs in a polygonum bush at Benjeroop, on the Lower Murray.

Mr. A. J. North has on several occasions taken an egg of the Cuckoo (*C. basalis*) from a nest of the White Eye. How beautiful the strange pink-speckled egg must have appeared alongside the uniform light bluish eggs of the White Eye! Surely it is an exception to the rule (if there be a rule) that Cuckoos deposit their eggs in a nest that contains similar coloured eggs to their own.

With reference to *Z. westernsenses*, Quoy and Gaimard, Mr. North has by clever and careful research,* with the assistance of several collectors, prepared a series of nearly fifty skins of the *Zosterops* in the neighbourhood of Sydney for examination and conclusively proved (notwithstanding that he has formerly published: "At Manly I have shot the two species in company with each other"†) that the *Z. westernsenses*, the type of which was obtained by Quoy and Gaimard at Western Port, Victoria, is only the spring and summer attire of *Z. carulescens*, Latham, when it is most conspicuous for its bright or waxy-yellow throat.

The chief breeding months of the White Eye are October to January, and during good seasons, to February. Mr. C. C. Brittlebank took fresh eggs at Oakleigh, Victoria, 12th February, 1893, while Mr. B. C. Bardwell found others near Lilydale about the middle of the same month, 1897.

The following is a migration note I received from Mr. C. C. Brittlebank, 9th April, 1897:—"Early in the morning about five o'clock, and before the stars had disappeared, I heard the calls of White Eyes passing overhead. As it was getting light I observed a number of small birds drop into the pine trees. When broad daylight, another flock came down from a height and proved to be White Eyes (*Zosterops*)."

For a pair—"Nest of the White Eye" and "Nest of the Yellow-faced Honeyeater," see illustration.

286.—ZOSTEROPS RAMSAYI, Masters.

YELLOW-VENTED WHITE EYE.

Reference.—Proc. Linn. Soc., N S. Wales, vol. i., p. 56.

Geographical Distribution.—North Queensland (Palm Islands).

Nest and Eggs.—Undescribed.

Observations.—Some doubt has been thrown on the validity of this species. Mr. North considers it is a good and distinct one, with olive-

* Rec. Austr. Mus. ii, p. 98.

† Cat. Nests and Eggs, p. 234.

yellow under tail coverts and a broad zone of white feathers round the eye.

287.—*ZOSTEROPS GOULDI*, Bonaparte.—(361)

GREEN-BACKED WHITE EYE.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 82.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 162.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 589 (1865).

Geographical Distribution.—West Australia.

Nest.—Cup-shaped; composed of fine grass, interwoven with green and golden-coloured moss; inside lined sparingly with long horse hairs and downy substance of plants, the whole sometimes so thin that the structure may be seen through from underneath; suspended usually in a bush or low tree. Dimensions over all, 3 inches by 2 inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to four; oval in form; texture very fine; surface slightly glossy; colour, uniform light bluish-green (a shade lighter in colour than those of *Z. carulescens*). Dimensions of a clutch in inches: (1) $\cdot68 \times \cdot48$, (2) $\cdot66 \times \cdot48$, (3) $\cdot65 \times \cdot48$.

Observations.—This lively bird is the western representative of the familiar White Eye or Grey-backed Zosterops of Eastern Australia.

In Western Australia I observed the Green-backed White Eye everywhere—in the thick forests of Cape Leeuwin, in the drier tracts of the Champion Bay District, where I saw the birds dipping their heads into the bell-shaped flowers of the native hibiscus, and even on solitary islands, the abode mostly of sea-fowl.

At Karridale, 28th October, 1899, I found two nests; one contained a fresh egg, the other a pair of naked, yellowish-fleshed squabs with more conspicuous yellow gapes. Again, a nest found at Quindalup, 8th November, contained a lovely set of pale bluish eggs. All these nests were built low, apparently in any convenient bush. Like its eastern ally, the Green-backed White Eye is a nuisance in a fruit garden and has earned for itself the name of Grape or Fig-eater from its partiality to these fruits.

According to Gould, Gilbert wrote concerning the breeding season, that it commences in August and ends in November, and that those nests which came under his observation during the earlier part of the season invariably contained two eggs, but in October and November he usually found three and upon one occasion, four.

288.—*ZOSTEROPS ALBIVENTER*, Reichenbach.

PALE-BELLIED WHITE EYE.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 164.

Previous Description of Eggs—North: Proc. Linn. Soc., N.S. Wales, vol. ii., 2nd ser., p. 408 (1887).

Geographical Distribution.—Northern Territory, North Queensland, and Interior.

Nest.—Cup-shaped, deep; composed of the dried skeletons of leaves, held together with spiders' web; inside neatly lined with fine wiry grass; the whole exterior surface is covered with thin broad strips of perfectly white, semi-transparent, paper-like bark of a melaleuca, which gives it a very beautiful appearance. Exterior diameter, $3\frac{1}{2}$ inches by 2 inches in depth; internal diameter, $1\frac{3}{4}$ inches by $1\frac{1}{2}$ inches deep (North).

Eggs.—Clutch, two to three; of a uniform, pale bluish-green. Dimensions: .72 inch in length by .5 inch in breadth (North).

Observations.—Mr. North states that this very distinct and well-marked species which he regarded as *Z. flavogularis*, Masters, was found tolerably abundant at Cape York and the adjacent islands, by the members of the Chevert Expedition, 1875. However, Dr. Sharpe considers the species identical with *Z. albiventer*.

The nest (described above) was taken by Mr. George Masters, on Warrior Island, in June, 1875. was attached by the rim to the thin branches of a shrub at a height of five feet from the ground, and contained two eggs. In examining the collection of Mr. S. A. White, Fulham (South Australia), I came across a *Zosterops* with a rather stout bill and conspicuous yellow throat, which I believe is referable to this species. It was shot by the late Mr. Samuel White in the Barrier Ranges, New South Wales. It is singular how this northern White Eye came so far south.

289.—*ZOSTEROPS LUTEA*. Gould.—(362)

YELLOW WHITE EYE.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 83.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 183.

Geographical Distribution.—West and North-west Australia, Northern Territory, and North Queensland.

Nest and Eggs.—Undescribed.

Observations.—Gilbert first met the Yellow White Eye in August, 1842, on Greenhill Island, Van Diemen's Gulf, dwelling in families of

from three to seven or eight among the mangroves or the densest thickets. He found it wilder and more solitary than the common White Eye (*Z. cerulescens*), and says that it does not, like that bird, resort to the gardens and the neighbourhood of the houses of the settlers. Its notes are a pretty canary-like song.

In winter, Mr. Tom Carter finds this White Eye common in the region of the North-west Cape.

290.—*ZOSTEROPS GULLIVERI*, Castelnau and Ramsay.

GULLIVER WHITE EYE.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 188.

Geographical Distribution.—Northern Territory and North Queensland.

Nest and Eggs.—Undescribed.

Observations.—This fine little White Eye was dedicated to its discoverer, Mr. T. A. Gulliver, for many years a faithful and honoured servant of the Postal and Telegraph Department of Queensland. I believe Mr. Gulliver discovered his feathered namesake when he was stationed at Normanton.

SUB-FAMILY—MYZOMELINÆ.

291.—*MYZOMELA SANGUINOLENTA*, Latham.—(341)

BLOOD HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 63.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 131.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 304 (1865); Campbell: Southern Science Record (1883); also Proc. Austr. Assoc., vol. vii, p. 579 (1898); North: Austr. Mus. Cat., pl. 13, fig. 20 (1889).

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest.—Cup-shaped, small, neat; composed of shreds of brownish bark, lined inside with a few casuarina needles; sometimes there is no lining; usually suspended in a bush or small tree—melaleuca, easuarina, etc. Dimensions over all, 2 inches by $1\frac{1}{2}$ inches in depth; egg cavity, $1\frac{1}{2}$ inches across by 1 inch deep.

Eggs.—Clutch, two to three; roundish in shape; texture very fine; surface slightly glossy; colour, warm or pearly white, marked chiefly about the apex with blotches and spots of dull chestnut and grey. Dimensions in inches of a clutch: (1) .64 × .49, (2) .61 × .47.

Observations.—This small and bright blood-coloured Honey Eater has an eastern habitat, ranging almost from Cape York down to Eastern Victoria. In the female the plumage is a uniform light brown. Length 5 inches, including a lengthened Humming Bird-like bill 1 inch long, admirably adapted for prospecting tempting flowers.

In Northern Queensland my companions and I enjoyed watching scores of these beautiful little birds, with shining scarlet head and neck, disporting themselves and feeding among the melaleuca blossoms, especially on dewy mornings. We did not succeed in finding a nest.

Later on, I was indebted to Dr. E. P. Ramsay for a pair of eggs. That gentleman observes that the Sanguineous Honeyeater arrives in the neighbourhood of Sydney during the months of October and November, remaining to breed during November and December, and as late as January.

The first Blood Honeyeaters noticed in Victoria, which are in the National Museum, Melbourne, were shot by Mr. C. J. Stafford in Gippsland. By way, I may mention that Mr. Stafford was a mate of the late Mr. H. W. Wheelwright ("Old Bushman"), who wrote "Bush Wanderings of a Naturalist."

Mr. F. Hutchinson sent to the "Australasian" office, for identification, a sketch of a pair of Blood Honeyeaters, which were observed feeding among the blossoms of his garden, Alexandria, Victoria, 22nd September, 1896. The beautiful birds were interesting visitors indeed, being so far out of their usual track, and so early in the season.

292.—MYZOMELA ERYTHROCEPHALA. Gould.—(342)

RED-HEADED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 64.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 133.

Previous Description of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. xxiii., p. 381 (1898).

Geographical Distribution.—North-west Australia, Northern Territory, North Queensland, also New Guinea and Aru Islands.

Nest.—A very small, cup-shaped structure, suspended by the rim to a thin, forked, horizontal twig; outwardly formed of very fine strips of bark and bark fibre, intermingled with a small quantity of cobweb, and lined inside entirely with a very fine, yellowish-white vegetable fibre. Dimensions over all, 2 inches by 1½ inches in depth; egg cavity, 1½ inches across by 1 inch deep (North).

Eggs.—Clutch, two; oval in form; colour, pure white, with freckles, irregularly shaped spots and blotches of pale red, unevenly distributed towards the larger end, where, in our specimens, they form an ill-defined zone. Dimensions in inches: (1) $\cdot 64 \times \cdot 45$, (2) $\cdot 61 \times \cdot 46$ (North).

Observations.—This beautiful and active little Honeyeater is found in Northern Australia, where it seems to be exclusively confined to the extensive beds of mangroves bordering the inlets of the sea—so we learn from Gilbert.

293.—MYZOMELA NIGRA, Gould.—(344)

BLACK HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 66.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 138.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 558 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1151 (1886); Campbell: Proc. Austr. Assoc. vol. vii., p. 580 (1898).

Geographical Distribution.—Australia in general.

Nest.—Cup-shaped, small, somewhat frail; composed of fine, dead twigs and grass stalks; inside lined with fine, dead, greyish grass. Usually placed in an exposed situation in the forked branches of a bush or tree—casuarina, &c. Dimensions over all, 2 inches by $1\frac{1}{2}$ inches in depth; egg cavity, $1\frac{1}{2}$ inches across by $\frac{7}{8}$ inch deep.

Eggs.—Clutch, two; authenticated examples from the Adelaide Museum are yellowish-buff, with an indistinct zone of a darker shade of the same colour round the upper quarter. Dimensions: (1) $\cdot 59 \times \cdot 46$, (2) $\cdot 58 \times \cdot 46$. These eggs are not the usual colour for Honeyeaters', being at first sight not unlike those of the Rufous Fantail (*Rhipidura rufifrons*), only smaller.

Observations.—The range of the splendid little Black Honeyeater extends across the southern part of Australia, Gould having found it on the plains of the Namoi, while Gilbert met the species amongst the myalls (*Acacia*) in Western Australia.

Although called black in the male, the abdominal parts are white; but this bird must not, because of its pied plumage, be confounded with the Pied Honeyeater (*Eutomophila leucomelas*). The female of this species is brownish.

This interesting species would, however, appear to be more peculiar to inland parts. In October, 1884, I met the Black Honeyeater in the bull-oak (*Casuarina*) belts of timber that intersect the Mallee country in the Wimmera district, Victoria. The prettily contrasted black and white plumage of the male agreeably harmonised with the surroundings. The flight of the bird at times is peculiar, being spasmodic rises and falls.

On each downward motion a tremulously plaintive note is uttered. I was convinced by the actions of several pairs of birds that they were breeding in the vicinity; but my perseverance, which extended over several days, failed to discover a nest, although Gilbert told us their nests were usually placed in most conspicuous situations. One he found in Western Australia was in a fork at the top of a small scrubby bush, not sheltered even by a bough or leaf, while a second one was on the dead branch of a fallen tree, in a similarly exposed situation.

The late Mr. K. H. Bennett informed Dr. Ramsay that he had found the Black Honeyeater plentiful near Mossiel, New South Wales, feeding among the Sandal-wood (*Myoporum*) trees. Mr. Bennett succeeded in finding a nest with two eggs, but no data are given.

During the progress of the unfortunate Calvert Exploration, 1896, it is recorded that on the 2nd October the explorer, Mr. C. F. Wells, shortly before he perished in the "lurid waste lands, pent in silence thick with hot and thirsty sighs," found a nest of the Black Honeyeater, which flushed from a tea-tree (*Melaleuca*) bush as he passed. The nest and its single egg were left at the abandoned depot in the desert.

Breeding months, September or October to December.

294.—MYZOMELA PECTORALIS, Gould.—(343)

BANDED HONEYEATER.

Figure.—Gould; Birds of Australia, fol., vol. iv., pl. 65.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 138.

Previous Description of Eggs.—Le Souëf: Ibis. p. 361 (1899).

Geographical Distribution.—North-west Australia, Northern Territory, and Queensland.

Nest.—Cup-shaped; exceedingly small and slender; composed of shreds of bark and cobwebs; lined with fine portions of grass, and suspended in a thin fork of a branchlet. Dimensions over all, $1\frac{3}{4}$ to 2 inches by $1\frac{1}{2}$ inches in depth; egg cavity, $1\frac{1}{2}$ inches across by 1 inch deep.

Eggs.—Clutch, two probably; in shape somewhat sharply pointed at one end; texture very fine; surface slightly glossy; colour, buffy-white, of a darker shade on the apex, where there is a band of faint vinaceous markings. Dimensions in inches: .66 × .48. Most resemble those of Black Honeyeater (*M. nigra*).

Observations.—The descriptions above are taken from the type specimens of a nest and egg in Mr. D. Le Souëf's collection. They were collected by Mr. E. Olive in the Port Darwin district, 24th December, 1898. The nest was suspended in a slender fork at the extremity of a branch of an ironwood tree. Two other nests have since been taken—one in January and the other in April.

The birds show a preference for open forest country where the timber is small. About thirty miles inland from Cooktown, Mr. Le Souëf himself noticed a few pairs, which attracted his attention by their pleasing twittering calls.

Mr. Kearland writes:—"At the well near our camp on the telegraph line, near the Fitzroy River, these pretty little birds were occasionally seen and specimens obtained. They were also found in considerable numbers at Derby in May, where the blossom afforded them an abundant supply of food. Though the adult males are decidedly black and white, several of those shot appeared to be immature, and had old brown feathers dispersed through the black. I have reason to believe that the young of both sexes are plain dark-brown above, and pale brown or dirty white beneath. What appeared to be adult females corresponded in plumage to the young ones. A deserted nest of this species bore a strong resemblance to that of *M. nigra*, but was lined with a few bits of horse hair."

295.—MYZOMELA OBSCURA. Gould.—(345)

DUSKY HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 67.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 143.

Previous Descriptions of Eggs.—Le Souëf: *Ibis*, p. 313 (1896); also *Victorian Naturalist*, fig. (1896); Campbell: *Proc. Austr. Assoc.*, vol. vii., p. 582 (1898).

Geographical Distribution.—Northern Territory and Queensland, also New Guinea.

Nest.—Cup-shaped, small, frail; composed of fine brownish rootlets; inside lined with long hair. Dimensions over all, $2\frac{3}{4}$ inches by 2 inches in depth; egg cavity, $1\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two usually; round oval in form; texture fine; surface slightly glossy; colour, warm-white, spotted, chiefly round the upper quarter, with reddish-brown or chestnut and purplish-grey. Dimensions of a clutch in inches: (1) $.66 \times .5$, (2) $.62 \times .5$. (Plate 13.)

Observations.—This obscure-coloured Honeyeater would also appear to be an obscure species. It is confined to Northern Australia. On the 13th August, 1885, on Hinchinbrook Island, Northern Queensland, I found a nest of this species being built in the mangroves, but, unfortunately, I had to leave that interesting collecting ground before the nest was completed.

Mr. Dudley Le Souëf states a nest of the Dusky Honeyeater was found on 23rd October, 1893, during his visit to Mr. Hislop, Bloomfield River district. The nest was well shaded by foliage near the top of an ironwood (*Eucalyptus*) tree, about thirty feet from the ground. One of the parents was secured.

Another nest containing two eggs was taken by Mr. R. Hislop, 17th October, 1895. The set in my collection was taken in July.

296.—*ACANTHORHYNCHUS SUPERCILIOSUS*, Gould.—(340)

WHITE-BROWED SPINE BILL.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 62.

Reference.—Cat. Birds Brit. Mus., vol. ix, p. 145.

Previous Descriptions of Eggs—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 554 (1865); Campbell: Proc. Austr. Assoc., vol. vii., p. 584 (1898).

Geographical Distribution.—South and West Australia.

Nest.—Cup-shaped, neat, compact, round; composed chiefly of rootlets enveloped with strips of bark matted with spiders' web; inside lined with the dark-red downy substance of banksia cones or with zamia wool, fur, &c.; usually placed in a bush or low tree such as a banksia. Dimensions over all, $2\frac{3}{4}$ inches by 2 inches in depth; egg cavity, $1\frac{1}{2}$ inches by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, one to two; lengthened in form; texture fine; surface slightly glossy; colour, pale-buff or soft pinkish-white, darker on the apex, finely spotted, more particularly on the apex, with chestnut and dull purplish-brown. Dimensions of single examples in inches: (1) $.78 \times .52$, (2) $.75 \times .53$. (Plate 13.)

Observations.—There is no mistaking the fine, little western Spine Bill, with its white eyebrows. Mr. William White, of South Australia, informs me he has identified this species as far eastward as Kangaroo Island, where he took several nests. Therefore it is on his authority that I have given South Australia as a habitat of the bird.

Gould described in detail the nest, stating that the eggs are two in number. Possibly that may be the number laid at the height of the breeding season; but at the beginning of the season I found one only. On the 1st October, 1889, at King George's Sound, I discovered two nests of the White-browed Spine Bill building, and watched them carefully. A single egg each was the result. Another nest I found had also a single egg, slightly incubated; while a fourth nest, found on the 7th, contained one young bird. Three nests out of the four were situated on a small prickly-leaved variety of banksia, at a height varying from five to eight feet from the ground.

I often watched the birds with merry chirp chasing each other round the trees; the noise of their wings as they flew past me made quite an audible sharp "purrt-purrt-purrt" sound.

Breeding months probably include September to December.

297.—*ACANTHORHYNCHUS TENUIROSTRIS*, Latham.—(339)

SPINE BILL.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 61.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 144.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. 1., p. 552 (1865); North: Austr. Mus. Cat., p. 220, pl. 12, fig. 20 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 582 (1898).

Geographical Distribution.—Queensland, New South Wales, Victoria, South Australia, Tasmania, King Island, and Furneaux Group.

Nest.—Cup-shaped, small, deep; composed outwardly of moss chiefly and bark; lined inside with grass, finished off warmly with feathers; usually placed in a thick bush such as prickly acacia or among the close branchlets of a banksia, exocarpus, or near the top of a tea-tree (*Melaleuca*). Dimensions over all, $3\frac{1}{2}$ inches by 2 inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three; sharply pointed oval in form; texture fine; surface slightly glossy; colour, pale buff, delicately spotted, especially about the apex, with chestnut and obscure purplish-grey. Dimensions of a clutch in inches: (1) $.75 \times .57$, (2) $.74 \times .55$.

A set from Tasmania is larger, rounder, and the markings of a richer brown, the ground-colour being also of a darker shade on the apex: (1) $.72 \times .53$, (2) $.72 \times .53$, (3) $.72 \times .52$.

Observations.—This ruby-eyed, slender-billed Honeyeater enjoys chiefly a southern habitat. The plumage of the Spine Bill, though not gay, is rich. The head is black, rest of the upper surface dark; underneath surface chestnut, excepting the throat; cheeks and chest white, with a patch of brown deepening into black at the lower edge on the throat; bill and feet dark. Total length, $5\frac{3}{4}$ inches; wing, $2\frac{3}{4}$ inches; tail, $2\frac{1}{4}$ inches; bill, 1 inch; feet, $\frac{3}{4}$ inch. It is an intensely interesting and familiarly known bird in private gardens, where it may often be heard repeating faster and faster its single high-pitched note, and where the bird appreciates the nectar of the fuchsia bells just as well as the sweets from tubular blooms of epacris growing in native heath-like tracts. I have watched Spine Bills in my own garden, at Armadale, gathering pollen from the so-called Chinese-lantern flowers (*Abutilon*). They do so on the wing, fluttering Humming Bird-like while probing the bell-shaped flowers for food.

Not much is known of the breeding economy of the little Spine Bill, consequently its eggs are deemed rare. Except one nest containing young found many years ago at Toorak, near Melbourne, I was unable to observe this Spine Bill's nest in the open till one day (20th November, 1896), when Mr. G. E. Shepherd, my son, and myself were exploring an enchanting gully near Somerville. Here we discovered in the space of about half-a-mile three nests—two building, and one with eggs. One nest was prettily ensconced in a bunch of flowering

elematis at the top of a tea-tree (*Melaleuca*). This nest was subsequently revisited by Mr. Shepherd, who found in it an egg of the Spine Bill, together with the much larger egg of the Pallid Cuckoo (*C. pallidus*). A nest I found at Bayswater, November, 1898, was very curious by reason of shafts of long feathers that protruded from the sides. The Spine Bills sometimes build near the flowering mistle-toes (*Loranthus*), upon which they feed. When they possess young, the male and female generally fly and gather food together.

Ornithologists are divided whether the Tasmanian Spine Bill should be separated from the mainland species or not. However, as Gould pointed out, although very nearly allied, there is a difference in the two birds, the Tasmanian variety being distinguished by its smaller size (which is the reverse of the general rule as regards the insular representatives of the mainland species) and by the much deeper colouring of the crescent-shaped markings on the neck, also of the brown on the abdomen.

The nests found by Gould, both in Tasmania and on the mainland, were built in low shrubs a few feet from the ground, mostly in a species of *leptospermum*.

The following is a description of a Tasmanian nest:—Cup-shaped, deep; composed of wool chiefly, grass and moss; inside lined with feathers. Dimensions over all, about 3 inches by 2 $\frac{1}{4}$ inches in depth; egg cavity, 2 inches across by 1 $\frac{3}{4}$ inches deep. Mr. A. E. Brent has usually found them in a bushy shrub, such as *mimosa* box or wattle-trees. He once found the unusual complement of four eggs in a Spine Bill's nest. He recollects taking a Tasmanian Spine Bill's nest with three eggs, and within three weeks the bird had rebuilt the old nest twice in another position in the same tree, laying each time another set of three eggs. The curious part of the affair was that the succeeding sets were much lighter in colour, the last being almost white, with a few faint spots. Here may be a hint on egg colouration, in which it appears that in eggs produced frequently and rapidly the colour pales out.

Breeding season August or September to January; the chief months, both in Tasmania and on the mainland, being October to December.

SUB-FAMILY—MELIPHAGINÆ.

298.—*MELITHREPTUS LUNULATUS*, Shaw.—(349)

WHITE-NAPED HONEYEATER.

Figure.—Gould: *Birds of Australia*, fol., vol. iv., pl. 72.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 204.

Previous Descriptions of Eggs.—Gould: *Birds of Australia* (1848), also *Handbook*, vol. 1., p. 568 (1865); *North Austr. Mus. Cat.*, p. 227 (1889); Campbell: *Proc. Austr. Assoc.*, vol. vii., p. 585 (1898).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia, and Kent Group (Bass Strait).

Nest.—Cup-shaped, small, but long or deep; composed of soft shreds of bark, matted outwardly with cotton-like substance, cocoons, portions of moss, grass, &c.; inside lined with mixture of soft vegetable matter such as rootlets, small leaves, &c., in other instances chiefly with soft reddish-coloured bark, and sometimes with fur or hair; usually situated at a good height from the ground, suspended in a swaying branch of a eucalypt or among the topmost branches of a tall sapling. Dimensions over all, $2\frac{1}{2}$ inches by 2 to 3 inches in depth; egg cavity, $1\frac{1}{2}$ inches across by $1\frac{1}{2}$ to $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, two to three; inclined to oval in form; texture fine; faint trace of gloss on the surface; colour, delicate or pale-buff, marked chiefly round the apex with reddish-brown or chestnut and dull-grey. Dimensions of a clutch in inches: (1) $\cdot76 \times \cdot51$, (2) $\cdot76 \times \cdot51$, (3) $\cdot75 \times \cdot5$. (Plate 13.)

Observations.—There are eight or nine members of this well-defined genus of Honeyeaters, all shapely and active birds, mostly confining their attention to tall eucalypts for honey and insects. The Lunulated (crescent-marked) Honeyeater may be taken as a type of the genus. It is about five inches in length, wearing a greenish-olive coat and white under surface. Head black, relieved with a white crescent-shaped mark on the back of the head; hence, I suppose, the vernacular title, lunulated. But all the *Melithrepti* have this crescent or new-moon-shaped markings more or less defined, except the Black-capped of Tasmania, whose poll is totally black.

This species is a fine and familiar little creature, and its plaintive half-whistling, half-hissing note is well known when heard amongst the "forest rafters." It is a pretty sight to see the birds clinging to and feeding amongst a cluster of flowering loranthus (mistletoe).

The habitat of the Lunulated or White-naped Honeyeater is somewhat extensive, extending from Southern Queensland round to South Australia. It is interesting to note that this Honeyeater was found on Kent Group, Bass Strait, by the expedition of the Field Naturalists' Club of Victoria, November, 1890.

Within its usual boundaries the bird is fairly plentiful. I recollect there was something akin to an irruption of this bird once in the vicinity of Melbourne, notably in gardens at Windsor. It occurred about the season 1866, when I remember particularly the so-called Cape wattles (but really a South-west Australian variety of acacia or albizzia, from whence it was introduced into Victoria by the late Baron von Mueller) being crowded with birds feeding amongst the flowers. As boys, we had no difficulty in "shanghaing" as many as we wanted, and that was so long as the poor birds remained in the trees to be aimed at. That these birds flock occasionally is further evidenced from one of Mr. H. E. Hill's "Bendigo Bird Notes:"—"On one occasion (31st August, 1895) near Strathfieldsaye, I came across a great flock of *Melithreptus lunulatus*, which must have been two or three hundred strong. At a little distance they looked precisely like a lot of sparrows."

The nest of the White-naped Honeyeater is not only difficult to get on account of the height at which it is usually built, but because the clever little bird often swings it at the end of a slender bough. However, I once found a beautiful nest suspended almost within reach in the overhanging branch of black wattle (*Acacia*).

Mr. C. C. Brittlebank tells me when he wishes to take one of these nests in a difficult position he always selects a windy day for the purpose, then chops the bough containing the nest off. The poor bird remains closely to its charge, supposing, no doubt, that the elements are merely a trifle more boisterous than usual. The coveted prize is safe, and within reach, before the dear deluded bird realises the position of affairs, when it somewhat hurriedly leaves its cosy nest and delicate flesh-tinted eggs to the cause—well, let us say—of science.

Gould found examples of the White-naped Honeyeater breeding in a state of plumage which he believed to be characteristic of youth. It is just possible that Gould mistook *M. brevirostris* for the young of *M. lunulatus*.

There are eggs of the Lunulated or White-naped Honeyeater in the Dobroyde collection, taken as early (in a double sense) as June, 1859, and July, 1861, respectively. Mr. Brittlebank has taken them as late as the 14th,* 18th, and 27th January respectively, therefore the extreme limits of the breeding season may be stated as from June to January, the chief months being September to November.

The Pallid Cuckoo is very partial to the nest of this little Honeyeater as a receptacle for its egg.

299.—MELITHREPTUS LUNULATUS (sub-species) CHLOROPSIS, Gould.—(350)

WESTERN WHITE-NAPED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 73.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 571 (1865).

Geographical Distribution.—West Australia.

Nest.—Usually suspended from small branches near the top of gum-trees (*Eucalypti*), where the foliage is thickest, which renders it difficult to detect. A nest found by Gilbert in October was formed of sheep's wool and small twigs; another found by him in November was attached to a small myrtle-like tree in a thick gum forest, not more than three feet from the ground (Gould).

Eggs.—Clutch, two to three; deep reddish-buff, thinly spotted, though more thickly at the larger end, with dark reddish-brown, some of the spots being indistinct, while others are very conspicuous. Dimensions $9\frac{1}{2}$ lines ($\cdot79$ inch) by 6 lines ($\cdot5$ inch)—(Gould).

* This nest was lined with white flowers.

Observations.—This western *Melithreptus* is closely allied to *M. lunulatus*—some authorities say they are identical, but, as Gould points out, it differs from the eastern bird in being larger and having the naked space above the eye greenish-white instead of scarlet.

During my own explorations in western woods I expected to take the eggs. However, I only saw the birds building a nest, which I could not obtain. It was then the beginning of October.

Breeding season possibly from August to December.

300.—MELITHREPTUS LUNULATUS (sub-species) ALBIGULARIS,
Gould.—(351)

WHITE-THROATED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 74.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 205.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 572 (1865); Le Souëf: Ibis, p. 458 (1900).

Geographical Distribution.—North-west Australia, Northern Territory and Queensland, also New Guinea.

Nest.—Always suspended to a drooping branch, which swings about with every gust of wind; is formed of dried, narrow strips of soft bark of the melaleuca (Gilbert-Gould).

Eggs.—Clutch, two usually; light salmon-colour, blotched and freckled with reddish-brown. Dimensions .9 lines (.75 inch) by .6 lines (.5 inch)—(Gilbert-Gould).

Observations.—The White-throated Honeyeater is the northern representative or sub-species of the Lunulated or White-naped bird, the varieties coalescing with each other in South Queensland. Gilbert found the White-throated species abundant in the Port Darwin district. It is also common in the Gulf of Carpentaria country, where it may be sometimes seen in company with its beautiful golden-backed cousin (*M. latior*), feeding among the blossoms or stunted eucalypts. More information would be welcomed respecting its nidification.*

* After closing my MSS. Mr. D. Le Souëf thoughtfully sent me the following note respecting some specimens just received:—

"*Melithreptus albigularis.*—Mr. R. Hislop found a nest near Cooktown on the 23rd October, 1899, in a *Melaleuca* at a height of about 15 feet from the ground. It was suspended near the end of a branch, and is a very pretty structure composed of bark interwoven with small bundles of white silky spider's web and thin pieces of paper like (*Melaleuca*) bark, and is lined with the latter material. It is fastened to the branchlets with chiefly spider's web, and measures in inches—external diameter 2½, internal, 1¾; external depth 2, internal 1½.

"The two eggs vary in colour, one being lighter than the other. The ground-colour is reddish-pink in one, and pinkish-white in the other, with light reddish-markings round the larger end, where they are confluent. Dimensions in inches: (1) .73 × .54. (2) .7 × .53."

I saw what I believed to be fledgelings of this species near Townsville, Queensland, 16th September, 1885. The breeding season possibly lasts until March.

301.—MELITHREPTUS GULARIS, Gould.—(348)

BLACK-CHINNED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 71.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 205.

Previous Descriptions of Eggs.—Ramsay: P.Z.S., p. 597 (1875); Campbell: Southern Science Record (1883); also Proc. Austr. Assoc., vol. vii., p. 587 (1898).

Geographical Distribution.—Queensland, New South Wales, Victoria, South and West Australia.

Nest.—Cup-shaped; composed of fine strips of bark matted together with wool and spiders' cocoons; warmly lined, sides as well as bottom, with wool, hair, &c.; usually suspended and well hidden in a pendulous leafy branchlet of a eucalypt. Dimensions over all, $2\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, two to three; inclined to oval in form; texture of shell fine; surface slightly glossy; colour, salmon-pink, with spots and somewhat large markings of rich chestnut and dull purplish-brown about the larger end. Dimensions in inches: (1) $\cdot77 \times \cdot58$, (2) $\cdot76 \times \cdot57$, (3) $\cdot75 \times \cdot56$.

Observations.—The Black-chinned Honeyeater is one of the larger species of its genus, approaching next in size to the Strong-billed Honeyeater of Tasmania. It ranges chiefly over the southern half of Australia; but is not usually found in the vicinity of the coast or in thick forest.

I never recollect identifying this bird in the open; but have had skins kindly forwarded for my examination from Mr. William White, of South Australia, and more recently (1896) from Mr. H. E. Hill, who collected the bird in the Bendigo district, Victoria. Eggs, formerly described by me, I received from Mr. H. O. Lane, Dubbo district, New South Wales. The specimens are somewhat smaller than I expected to see; but I find Dr. Ramsay gives even smaller dimensions ($\cdot73 \times \cdot55$ inches). I have re-described an authenticated nest and eggs taken by Messrs. A. White and J. W. Mellor, "Holmfirth," South Australia. The nest, which contained three eggs, was situated at the extremity of a blue gum-tree bough. The branch was so high that it had to be severed from the tree and lowered to the ground with ropes. Date, 3rd December, 1898.

Breeding months, July to December.

302.—MELITHREPTUS VALIDIROSTRIS, Gould.—(347)**STRONG-BILLED HONEYEATER.**

Figure.—Gould, Birds of Australia, fol., vol. iv., pl. 70.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 206.

Previous Descriptions of Eggs.—Gould, Birds of Australia (1848), also Handbook, vol. i., p. 565 (1865); North: Austr. Mus. Cat., p. 225 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 588. (1898).

Geographical Distribution.—Tasmania, King Island, and probably Furneaux Group.

Nest.—Cup-shaped, deep, round; composed chiefly of wool and grasses, in some instances of stringy-bark; inside lined with a few flowering portions of grass, &c.; usually suspended in the topmost branches of a sapling or other tree.

Eggs.—Clutch, three usually; nearly oval, slightly compressed towards one end; texture fine; surface without gloss; colour, beautiful flesh-tint, moderately but boldly blotched and spotted, and chiefly about the apex, with rich reddish-brown or chestnut and dull purple-brown. Dimensions of a pair in inches: (1) .88 × .66, (2) .86 × .63. (Plate 13.)

Observations.—This fine Honeyeater—the largest of a most interesting genus—is peculiar to Tasmania and King Island, where I have myself procured the bird. Gould was indebted to the late Rev. Thomas J. Ewing, D.D., for the nest and eggs of the Strong-billed Honeyeater, which he (Gould) failed to find himself during his sojourn in Tasmania.

I have to thank the Rev. T. H. Hull, of Tasmania, for the first examples of eggs in my collection, which were obtained during the season 1874.

Breeding season August to December.

303.—MELITHREPTUS BREVIROSTRIS, Vigors and Horsfield.**BROWN-HEADED HONEYEATER.**

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 207

Previous Descriptions of Eggs.—Campbell: Southern Science Record, and Nests and Eggs Austr. Birds, pl. 1, fig. 349A (1883); also Proc. Austr. Assoc., vol. vii., p. 589 (1898); North: Austr. Mus. Cat., p. 225. (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria, South and West Australia.

Nest.—Cup-shaped, small, neat; composed of grasses or fine shreds of bark matted together with portions of spiders' cocoons,

greenish and white; inside lined warmly with a ply of fur or hair; usually suspended at the extremity of a eucalypt branch in open forest. Dimensions over all $2\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, two to three; inclined to roundish-oval in shape; texture fine; faint trace of gloss on surface; colour, reddish-buff or flesh-colour, darker on the apex, which is sparingly spotted and splashed with reddish-chestnut, a few specks also appearing here and there over the shell; other specimens are sparingly speckled all over. Dimensions of a clutch in inches: (1) $.77 \times .57$, (2) $.76 \times .56$, (3) $.74 \times .57$.

Observations.—Gould was in doubt about the existence of this species; possibly he mistook it for the youthful *M. lunulatus*. I fear he was erroneously informed when he states the characteristic bare space above the eyes of *M. brevirostris* is *greenish-blue*. From specimens I have examined immediately after being shot it should be a *delicate flesh-tint*. The bird is otherwise plainly coloured, is extraordinarily active, and possesses a disagreeable, rough, rattle-like note.

While on a collecting trip at Bagshot, Bendigo district, October, 1880, I procured examples of bird, nest, and egg. Dr. Ramsay kindly identified the bird for me, which enabled me to describe the nest and egg. I have since observed the bird in various parts of Victoria, my last recollection of them being the 25th September, 1897, when I saw a flock of six or seven merry birds feeding on the pollen, &c., of the flowering cones of a stunted banksia that grew on the plains near Mount Cotterell. I was agreeably surprised to notice the Brown-headed Honeyeater in Western Australia; therefore its habitat extends across the southern half of the Continent.

On the Bagshot trip, already referred to, I was accompanied by Mr. James Peatling, a local farmer. We found Brown-headed Honeyeaters somewhat numerous, and I succeeded in obtaining a nest, which was suspended to the extremity of a swaying branch of a box-tree (*Eucalyptus viminalis*). This nest was composed of grass, thickly woven in and out with wool and fur. The latter material the birds pull off live animals. We were attracted by the lively actions of this curious little Honeyeater upon the back of a native bear (*Koala*), which had taken up its usual position in the fork of a tolerably tall gum. The bird was clinging on in a very comical manner, while busily engaged plucking off a mouthful of fur. One of our party, desiring to rob the animal of its furry coat—and of its life—fired, hit the bear, but did not dislodge it. The discharge, however, merely frightened our little feathered friend on to a neighbouring branch, and before the gun was reloaded the bird had commenced operations again on the back of the bear.

Mr. A. J. North informs us there is in the Dobroyde collection the nest and eggs of this species, together with the birds shot therefrom, obtained by Mr. J. Ramsay at Cardington, on the Bell River, November, 1867. These interesting specimens were, however, lost sight of, and were not described till the "Catalogue of Nests and Eggs" appeared, 1889.

In November, 1895, Mr. C. C. Brittlebank found a pair of Brown-headed Honeyeaters building in the bed of the Myrning Creek below his house. The birds first attracted his attention by pulling hair off the cattle. The same season Mr. G. E. Shepherd found two pretty nests near his nurseries, Somerville, the second one being taken on the 3rd January. The following season he found other two nests, but each only contained an egg of the Pallid Cuckoo.

The picture, "Nest of the Brown-headed Honeyeater," was taken from an example in a eucalypt branch, kindly forwarded to me by Mr. Shepherd.

Breeding months September to January.

304.—MELITHREPTUS MELANOCEPHALUS, Gould.—(352)

BLACK-HEADED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 75.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 207.

Previous Descriptions of Eggs.—Swan: Proc. Roy. Soc., Tasmania (1885); Campbell: Victorian Naturalist (1886); North: Austr. Mus. Cat., app., pl. 12, fig. 18 (1890); Campbell: Proc. Austr. Assoc., vol. vii., p. 591 (1898).

Geographical Distribution.—Tasmania, King Island, and Furneaux Group.

Nest.—Cup-shaped, somewhat deep and pointed at the base, with thick bulging sides; composed of wool chiefly, moss, and spiders' cocoons, with a few threads of stringy-bark round the rim; inside warmly lined with fur and feathers; usually suspended in the tender foliage at the extremity of a pendulous branch in a stringy-bark (*Eucalypt*) sapling or tree, where it is difficult to detect. Dimensions over all, 3 inches by 4 inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, three usually; roundish oval in form; texture fine; surface slightly glossy; colour, delicate flesh-tint, marked moderately, and chiefly about the apex, with well-defined spots of rich reddish-brown or chestnut and purplish-brown. Resemble those of *M. validirostris*, but are proportionally smaller. Dimensions of a clutch in inches: (1) $\cdot78 \times \cdot57$, (2) $\cdot78 \times \cdot57$, (3) $\cdot76 \times \cdot56$.

Observations.—This interesting Honeyeater, with its head entirely black, is peculiar to Tasmania and King Island, where specimens were procured by the expedition of the Field Naturalists' Club of Victoria, 1887. It may possibly be found on the Furneaux Group, although we did not notice it there during a subsequent trip, being engaged chiefly amongst the sea-birds.



NEST OF THE BROWN-HEADED HONEY-EATER.

From a Photo by the Author

During my Tasmanian excursion (1883) I was much delighted at the lively prying actions whilst searching for food of both the Strong-billed and Black-headed Honeyeaters; the latter also possess quite a cheerful little song. I endeavoured persistently to discover their nests, but only found fully-fledged young of the Strong-bill, which species had evidently commenced breeding about the end of August or the beginning of September.

Much interest was attached to the Black-headed Honeyeater, because its nest remained so long undiscovered, and the finding of the nest completed those of the Honeyeaters of Tasmania.

At a meeting of the Royal Society of Tasmania (November, 1884), Mr. E. D. Swan drew attention to the extremely rare nest and eggs, (in fact, the first ever taken) of the Black Cap (*M. melanocephalus*), which had been found during the month at Austin's Ferry, Bridgewater, and presented to the Museum by Miss A. Brent, Roseneath.

It is always a pleasure for me to write up an account of the first find of any nest and eggs new to scientific knowledge. It is more so in this instance, because the finders were lady field naturalists. Here is the authenticated story of the discovery by the Misses Brent of the nest of the Black-capped Honeyeater, as told by their brother (Mr. A. E. Brent):—

“The first intimation I received of a nest of our interesting little Black-capped Honeyeater was from my two youngest sisters. One day they chanced to witness one of these birds picking wool from a sheep and flying with it to the top of a small-leaved sapling. From the first they could see that it would be impossible to reach the spot, therefore they decided to remain watching for some time. Then, armed with a pair of field-glasses, they watched the progress of the nest from day to day until they made certain that the bird had commenced sitting. Armed again (but this time with an axe) my sisters set forth to fell the tree, trusting to chance, as they said afterwards, that the nest and perhaps the contents might be saved in the fall.

“The tree fell midst briars and scrub, and after much scrambling and searching they at last discovered the nest, with the poor little bird clinging fast to it, although the nest was almost upside down. Seeing this they rushed forward, and in so doing scared the bird away, but owing to the thick mass of leaves, &c., crushed under the nest, the eggs were saved from being broken. Full of excitement, the girls related the story to me, and after this a diligent search was made for more, with the result that several nests were taken during that season (1884).”

As Mr. C. C. Brittlebank discovered in the case of the Lunulated or White-naped Honeyeater on the mainland, so it has been independently proved in Tasmania that the Black-capped Honeyeater will cling to its nest, more especially during windy weather, if the tree containing it be felled.

Mr. Brent proceeds to state:—“A friend and I discovered one which was impossible to obtain by climbing, at the extreme end of a horizontal branch of a large white-gum (*Eucalyptus*). Our only way was to fell the tree or sling the branch with a rope. The latter course was decided upon. A noose was made round the limb and pushed with a stick as

far out as possible, then the rope was passed over another branch higher up and the other end made fast at the ground. With a light saw the branch was severed. I thought to retain my hold at the butt end, but, alas, the bough proved too much for me, it tipped and swung down, the little bird remaining fast to its nest, which was by this time completely upside down. We could not venture too near for fear of disturbing her, so I crept in under cover of the foliage and cut the branch, again turning it upright, and in this way we took a full set of three eggs and an egg of the Pallid Cuckoo.

"Since discovering this little fact, I have taken many nests of the Black-capped Honeyeater by felling the trees, but I must say not always successfully. My experience has taught me to choose a boisterous day; even a good, steady breeze will suffice, for nature prompts the sitting bird to cling more closely to her nest. Care should be taken that the falling tree does not strike or foul another tree."

A nest, with eggs, kindly forwarded to me for description, by Mr. Brent, was taken in like manner, and when the poor bird was rescued from the fallen foliage, she was covering her own eggs, beside an additional burden—an egg of the Pallid Cuckoo. Date, November 21st, 1896.

In the Appendix of the Catalogue of the Australian Museum it is stated that Dr. Holden, of Circular Head, Tasmania, found several nests of the Black-capped Honeyeater in December (1899). One in particular commenced on the 7th of that month contained three fresh eggs by the 25th. One nest had no wool, but was chiefly composed of green moss and spiders' web, with a lining of flower-seeds.

The male Black-capped Honeyeater, and doubtless many other kinds of birds, sometimes feed the female upon her nest, especially if the weather be windy.

Breeding months from October to December.

305.—MELITHREPTUS LÆTIOR, Gould.

GOLDEN-BACKED HONEYEATER.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 40.

Geographical Distribution.—North-west Australia, Northern Territory, Queensland (interior probably), and South Australia.

Nest and Eggs.—See Appendix.

Observations.—As Gould states, although very closely allied to *M. gularis*, this species is altogether a much more finely-coloured bird. In size it is slightly larger, and it is at once distinguished by its white under surface, and the beautiful lemon-yellow on the back of the neck, as well as by the *bright-yellow* naked skin surrounding the eye, which part is *bluish-green* in *M. gularis*.

Dr. Sharpe, in referring to Gould's type of the beautiful and well-named Golden-backed Honeyeater, is of opinion that it "is apparently a very old male in full breeding plumage" of *M. gularis*. Many answering to Gould's type (*M. latior*) have since been found. The talented Doctor must also be prepared to accept a female as an "old male," since Mr. G. A. Keartland was good enough to present me with one which he shot in the far north-west. Mr. Keartland informs me he found the beautiful Golden-backed Honeyeater plentiful on the Fitzroy River from Mount Campbell to Derby. In May these birds had apparently paired.

306.—*MELITHREPTUS VINITINCTUS*, De Vis.

GAY-TINTED HONEYEATER.

Reference—Proc. Roy Soc., Queensland, vol. i., p. 159

Geographical Distribution.—North Queensland

Nest and Eggs.—Undescribed.

Observations.—This scarce species was first collected by Mr. Kendall Broadbent, in 1884, at Kimberley (Gulf of Carpentaria), and afterwards noticed in the neighbourhood of that rich region—Cape York.

307.—*PLECTORHYNCHUS LANCEOLATUS*, Gould.—(323)

STRIPED HONEYEATER.

Figure—Gould: Birds of Australia, fol., vol. iv., pl. 47.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 203.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 526 (1865); North: Austn. Mus. Cat., p. 209, pl. 13, fig. 2 (1889); Campbell: Proc. Austrn. Assoc., vol. vii., p. 594 (1898).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Cup-shaped, deep; composed of fibrous roots and grasses, interwoven with wool or cotton-like texture of flowers and feathers; inside lined sparingly with grass and hair; usually suspended at the extremity of a branch of casuarina, myall (*Acacia*), or other tree in open timbered tracts of the interior. Dimensions over all, 4 inches by 4½ inches in depth; egg cavity, 3 inches across by 3¾ inches deep.

Eggs.—Clutch, three to four, occasionally five; lengthened in form, somewhat pointed towards one end; texture fine; surface glossy;

colour, warm-white, minutely spotted with reddish-brown or chestnut and purplish-grey, the markings being more numerous about the upper quarter. Dimensions of a pair in inches: (1) $\cdot 98 \times \cdot 68$. (2) $\cdot 98 \times \cdot 67$; of a larger-sized set: (1) $1\cdot 04 \times \cdot 69$, (2) $1\cdot 04 \times \cdot 68$, (3) $1\cdot 03 \times \cdot 69$. Queensland specimens are usually the smallest. (Plate 13.)

Observations.—The Lanceolate, or Striped Honeyeater, is a greyish bird—dark above and lighter on the under surface—with head and back of neck mottled black and white; eyes brown, bill and feet bluish. Dimensions in inches: Length, 9 inches; bill, $\frac{3}{4}$ inch; wing, $4\frac{1}{2}$ inches; tail, $4\frac{1}{2}$ inches; feet, 1 inch.

This unique and interesting form of Honeyeater is strictly a denizen of the interior provinces from Queensland to South Australia, where it loves the pine ridges and open tracts of casuarina, acacia, &c. The bird is the possessor of a loud whistling note, and is usually found in pairs.

On one occasion only did Gould discover the nest, which was suspended from the extreme tip of a casuarina branch overhanging a stream.

In 1880 I received from Mr. R. Macfarlane, then at Mallee Cliffs station (New South Wales), a full set of four eggs of the Striped Honeyeater. In September the following year Mr. A. J. North reports he received from the Wimmera district, Victoria, a beautiful nest, together with a set of eggs, while it is stated that the late Mr. K. H. Bennett found this Honeyeater breeding plentifully in the neighbourhood of Ivanhoe and Mossgiel, in the interior of New South Wales.

On the 9th October, 1893, Mr. C. Barnard found in Queensland a nest of the Striped Honeyeater with the unusually full complement of five eggs. I have a note from an interior friend of an attractive nest of the Striped Honeyeater he saw. It was suspended to the pendulous branches of a myall (*Acacia*), and decorated with long Emu feathers loosely stuck on, which were flying in the breeze.

Gould incidentally states that the circumstances of his having seen fully-fledged young and eggs at the same time prove that these birds rear at least two broods in the season.

Breeding months August to December or January.

308.—GLYCYPHILA FULVIFRONS. Lewin.—(301)

FULVOUS-FRONTED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 28.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 210.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 496 (1865); North: Austn. Mus. Cat., p. 196, pl. 13, fig. 6 (1889); Campbell: Proc. Austn. Assoc., vol. vii., p. 595 (1898).

Geographical Distribution.—South Queensland (?), New South Wales, Victoria, South and West Australia, Tasmania, and Kent Group; and probably other islands in Bass Strait.

Nest.—Cup-shaped, deep; composed of flat, dead rushes or broad grass, sometimes with strips of bark and a few spiders' cocoons added; lined inside with grass, finally with feathers and a downy vegetable substance. In Western Australia the lining is chiefly composed of an elastic ply of zamia (cycad) wool; usually placed close to the ground in the heart of a low bush in open heath-like country. Average dimensions over all, $4\frac{1}{2}$ inches by $2\frac{7}{8}$ inches in depth; egg cavity, $2\frac{1}{4}$ inches across by $1\frac{3}{8}$ inches deep.

Eggs.—Clutch, two usually; inclined to oval in form, and large compared with the size of the parent; texture of shell very fine; surface slightly glossy; colour, white, very sparingly and lightly spotted with chestnut, the markings appearing more particularly about the apex. Dimensions of a clutch in inches: (1) $\cdot88 \times \cdot63$, (2) $\cdot87 \times \cdot63$. (Plate 13.)

Observations.—This active Honeyeater has a habitat extending across the southern portion of Australia, including Tasmania and some of the islands in Bass Strait. Both Gould and Dr. Ramsay show South Queensland as a habitat of this species, but it is extremely doubtful whether the bird is found there. It shows a preference for open, heathy, or low scrubby localities, and is remarkably shy.

As the name implies, this Honeyeater has a fulvous or tawny-coloured forehead. Its coat is dark, while the under surface is light-coloured, especially the throat, which is white. In the young the throat is yellow, eyes and bill brown, legs and feet greenish-grey; total length, $5\frac{1}{4}$ inches; wing, 3 inches; tail, $1\frac{3}{4}$ inches; bill, $\frac{3}{4}$ inch.

Of all the Honeyeaters, I think this bird has the most rapid flight. It frequently mounts high into the air, hence the trivial name of "Skylark" applied to the bird by youths in the neighbourhood of Albany (West Australia).

Besides eating insects, it is commonly known in the King George's Sound district that this Honeyeater regales itself on the nectar of the flaming bottle-brush (*Callistemon*) to such an extent that at certain seasons the bird becomes intoxicated and is easily caught beneath the bushes, helpless. The same remark sometimes applies to the Long-billed Honeyeater, or "Yellow Wing" as it is locally called.

History repeats itself. Gould recorded regarding this Honeyeater: "The site generally chosen for its nest, as observed at the Swan River, is a low bush or scrubby plant, in which it is often placed near the ground." I had frequently observed this bird in Victoria, and on the adjacent islands in Bass Strait, without finding its nest, but just forty-one years after Gould wrote his remarks, I was strolling over the limestone ridges of the Lower Swan, when I flushed a Tawny-crowned Honeyeater, and found my first nest of this wild species in such a position as is exactly described by Gould (*i.e.*, Gilbert). The nest contained two eggs, partly incubated. Date, 19th November, 1889. The month previous, when in the Tor Bay district, near Albany, a shepherd brought me a nest, also with two eggs.

Early in the season of 1896, on the heathy grounds near Cheltenham, Victoria, a pair of Fulvous-fronted Honeyeaters was observed uttering distressing cries over their nest in a bush about fifteen inches from the ground. The cause of the disturbance was a snake, which extracted one of the young from the nest and was about to swallow it. The youthful collectors who were attracted to the spot by the birds' calls had nothing to battle the snake with except the handle of a butterfly net. With this they struck the reptile, which quickly made its escape.

In a communication to me Mr. G. K. Hinsby writes:—"Re *Glycyphila fulvifrons*, I note that Gould mentions it as only inhabiting the northern parts of Tasmania. I obtained birds and eggs on the extreme south end of Bruni Island, near Cloudy Bay Lagoon (Dec., 1884). The nest was cup-shaped, made of she-oak (*Casuarina*) needles, lined with wool and cow's hair. I never saw a nest look so strange, not a foot from the ground, in one of the stunted bottle-brush shrubs. I saw the male bird perched on a dead branch of a small gum-tree, pouring forth its peculiar note. As I approached it flew, but I stopped it before it had gone far, and the shot flushed the female from her nest close by, which I found without difficulty. The eggs (two) were slightly incubated and were almost white, with a faint pinkish shade, and spotted with a few purplish-black spots."

Breeding months August to December or January, but nests with eggs have been observed during May and July.

309.—GLYCYPHILA ALBIFRONS, Gould.—(302)

WHITE-FRONTED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 29

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 211.

Previous Descriptions of Eggs.—Gould: Birds of Australia. (1848); also Handbook, vol. i., p. 498 (1865); North; Austn. Mus. Cat., p. 197 (1889).

Geographical Distribution.—New South Wales, Victoria, South, West, and North-west Australia.

Nest.—Cup-shaped; composed of bark and chiefly old, greyish grass; lined inside, mostly on the bottom, with brownish, velvet-like particles of vegetation resembling pieces of banksia seed cones; usually situated in a bush—casuarina, &c., occasionally in a spinifex tussock. Dimensions over all, $2\frac{1}{2}$ to 3 inches by $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{1}{2}$ to $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two; oval in form, some examples more compressed at the smaller end; texture of shell fine; surface slightly glossy; colour, fleshy-pink, spotted and blotched about the apex with rich reddish-brown or chestnut and dull-purple. Dimensions in inches: (1) $\cdot77 \times \cdot55$, (2) $\cdot76 \times \cdot59$.

These eggs are not so white as those of the other *Glycyphila*, but most resemble those of the Crescent Honeyeater (*Meliornis australasiana*).

Observations.—Gould first observed this species in the great Murray scrub of South Australia, where he succeeded in killing several specimens of both sexes. It is also an inhabitant of the inland districts of Western Australia, and likewise found in the interior of Victoria, notably the Wimmera district (where I have seen the bird), and of New South Wales, where it is said to be scarce. I believe it was seen in the North-west Desert by the Calvert Expedition, 1896.

Mr. Charles McLennan was good enough to forward me a bird, nest, and eggs from the Wimmera, together with some interesting field notes gathered during his trapping travels one winter season (1899), which was remarkable for the number of different kinds of birds that were breeding at the time.

Although the usual breeding months recorded for the White-fronted Honeyeater are August to February, Mr. McLennan found nests as under:—

April 1st—Nest, two eggs, in small mallee bush about three feet from the ground; 10th April—Nest, two eggs, in small prickly bush; 15th May—Nest, two young ones, in porcupine grass; May 23rd—Two nests, two eggs each; June 30th—Nest, one young and one egg; July 26th—Nest, two eggs; July 27th—Nest, two eggs.

310.—GLYCYPHILA FASCIATA, Gould.—(303)

WHITE-BREASTED HONEYEATER.

Figure.—Gould: Birds of Australia, fol. vol. iv., pl. 30.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 212.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1885), North: Austr. Mus. Cat., app., pl. 13, fig. 9 (1890); Campbell: Proc. Austr. Assoc., vol. vii., p. 597 (1898); Le Souëf: Victorian Naturalist, vol. xvi., p. 67 (1899).

Geographical Distribution.—Northern Territory and Queensland.

Nest.—Unusual shape for that of a Honeyeater, being domed, with side entrance; composed entirely of paper-like mclaleuca bark; lined inside with the same but finer material; usually suspended from a mclaleuca tree overhanging water.

Eggs.—Clutch, three; elongated in form; texture of shell very fine; surface without gloss; colour, white, numerously freckled and spotted like Wrens' (*Maluri*) eggs, with reddish-brown, more particularly about the apex. Dimensions in inches of a clutch: (1) .82 x .54, (2) .8 x .52.

Observations.—This White-breasted Honeyeater enjoys a habitat across Northern Australia. In May, 1884, I was indebted to the late Mr. George Barnard, of Coomoooolaroo (Queensland), for the eggs of this interesting species. His son, Mr. Harry Barnard, subsequently wrote me:—" *Re Glycyphila fasciata*, the breeding months are October and November. In November, 1893, I found five nests on the Dawson River, three of which were ready for eggs, one containing a set of three eggs, and the fifth had three newly-hatched young. The nests are always built on long, drooping twigs overhanging water, and at times are very difficult to reach. The trees generally selected are melaleucas, the nests being built of the bark of that tree."

311.—GLYCYPHILA OCULARIS, Gould.—(304)

BROWN HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 31.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 213.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i. p. 501 (1865); North: Austrn. Mus. Cat., p. 198, pl. 13, fig. 17 (1889); Campbell: Proc. Austrn. Assoc., vol. vii., p. 598 (1898).

Geographical Distribution.—Northern Territory, Queensland, New South Wales, West and North-west Australia.

Nest.—Cup-shaped, small; delicately constructed of soft bark (notably melaleuca), with a few spiders' cocoons added, and finished round the rim with spiders' web; in Queensland, usually lined inside with the shiny substance composing the cocoons of a mantis; in Western Australia, cosily lined with the light brownish downy substance gathered from the stems of zamias (*Cycads*); usually placed within reach, suspended among the upright twigs of a bush or a small tree. Dimensions over all, $2\frac{1}{2}$ inches by $1\frac{1}{2}$ to $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{1}{2}$ inches across by $1\frac{1}{8}$ to $1\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, two; short in shape, peculiarly compressed about the smaller end, which appears somewhat blunt; colour, sometimes uniformly white, but usually marked with a very few spots of pale-chestnut or light reddish-brown, especially about the apex. Dimensions of a clutch in inches: (1) $\cdot 67 \times \cdot 51$, (2) $\cdot 66 \times \cdot 51$. (Plate 13.)

Observations.—Excepting the extreme south-eastern portion of the Continent, this cheerful little Honeyeater enjoys a habitat on either side of Australia.

At Townsville, 1885, this bird first attracted my attention by its merry, Reed Warbler-like song, which is exceedingly cheerful. Gould describes it as "remarkably shrill, rich, clear and distinct in tone." He also remarked that when the female is sitting upon her eggs the male sings all day long, with scarcely any intermission.

On the Fitzroy River, near Rockhampton, the birds were so numerous that I had no difficulty in one day (2nd October) in discovering three of their small nests, which were suspended in thick melaleuca bushes, each containing a pair of eggs. One set, however, was nearly hatched. Subsequently, more inland at Coomoooolaroo, I found the merry little Honeyeater quite at home among the orange trees standing in the garden, lining its nest with the soft substance gathered off the bursting vine buds, &c.

I was still more delighted a few seasons afterwards to find this species on the opposite side of the Continent, and to hear the familiar merry songs along the shores of the Swan Waters. There I also found a pair busily building a nest suspended to the dead, drooping twigs of an acacia, the nest in this instance being lined with the woolly substance gathered from the numerous zamia palms or cycads.

Before I left the locality (23rd November, 1889) I took a pair of eggs, which were of the characteristic light colour of those of the eastern birds, and resembling those found in the days of yore by good Gilbert. In one instance, in Western Australia, Gilbert found a nest attached to the slender fibrous roots hanging beneath a bank over a pool of water—surely a very unusual situation.

Breeding months September to December.

312.—GLYCYPHILA SUBOCULARIS, Gould.—(305)

LEAST HONEYEATER.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 214.

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland.

Nest and Eggs.—See Appendix.

Observations.—With regard to the Least Honeyeater of the northern coast, Gould appeared doubtful whether it was really a good species. First he united it with *G. ocularis*, then upon further examination separated it again, remarking that the *G. subocularis* is a smaller bird and of a more yellowish tint than *G. ocularis*, and consequently one of the most diminutive (only $4\frac{3}{4}$ inches long) of the meliphagous birds.

Mr. North is of opinion that *subocularis* is the youthful *ocularis*, and points out that a yellow wash to some of the feathers of several species of the *Meliphagidæ* is a certain indication of youth, and that it is entirely lost when the birds have attained their full adult livery. This may be more particularly observed in *Philemon citreogularis*, *P. sordidus*, *Myzomela pectoralis*, &c.

Mr. Broadbent, the well-known collector, informs me that he has shot *subocularis* in company with *ocularis* on Sweer's Island, in the Gulf of Carpentaria.

313.—GLYCYPHILA MODESTA, Gray.

BROWN-BACKED HONEYEATER.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 46.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 215.

Previous Descriptions of Eggs.—Ramsay: P.Z.S., p. 385 (1868); Campbell Victorian Naturalist (1887); North: Austrn. Mus. Cat., app., pl. 13, fig. 10 (1890); Campbell: Proc. Austrn. Assoc., vol. vii., p. 600 (1898).

Geographical Distribution.—North Queensland; also New Guinea and Aru Islands.

Nest.—Bulky, somewhat long in shape, domed, with a hooded side entrance; composed of strips, narrow and broad, of the paper-like melaleuca bark, matted together; lined inside with softer bark of the same kind; usually suspended on a melaleuca, particularly from a branch overhanging water. Length $7\frac{1}{2}$ inches, diameter $3\frac{1}{2}$ inches; entrance, which is about the centre of the structure, 1 inch across.

Eggs.—Clutch, two, rarely three; long oval in shape; texture of shell very fine; surface without gloss; colour, pure white, with here and there very minute dark-brown, almost black, specks or dots. Dimensions in inches: (1) $.76 \times .51$, (2) $.75 \times .5$. (Plate 13.)

Observations.—The habitat of the Brown-backed or Dusky Honeyeater is Northern Queensland, with an extension on the opposite coast of New Guinea, about melaleuca swamps.

During our Cardwell camp I found a pair of these birds commencing to build (7th September, 1885) their dome-shaped nest in their favourite tree—a melaleuca—overhanging a stream.

With regard to the dome-shaped structure of the nest, it is worthy of remark that while the two southern species—*G. fulvifrons* and *G. albifrons*—build cup-shaped or open nests, the two northern kinds—*G. fasciata* and *G. modesta*—build covered-in structures. This would lead us to suppose, from an oological point of view, there was some specific or sub-specific difference between the two sets of birds. But, possibly, the northern birds have been led to conceal their eggs, as well as to suspend the nest over water where it is difficult to reach, to escape some natural enemy. Mr. Broadbent tells me a curious circumstance respecting the nests of this Honeyeater found by him. Every one he noticed, both at Cardwell and Cape York, was situated just above a hornet's nest. He adds, feelingly, "the small hornet that follows you for a hundred yards or so and stings you on the back of the neck."

Mr. J. A. Boyd sent several sets of eggs of the Dusky Honeyeater to the Australian Museum from the Herbert River, possibly that bird's southern limit. Further north, on the Bloomfield River, Mr. Dudley Le Souëf found several of the dome-shaped nests, suspended generally at a height of about eight feet from the ground in melaleuca saplings.

The following is one of Mr. W. B. Barnard's notes on the same species:—"I am sending you a skin of this little Honeyeater, or 'Weaver Bird,' which builds a hanging nest composed of tea-tree (*Melaleuca*) bark, with entrance at the side; length about six inches; lays two long eggs, white, with minute black spots. Builds in the forest country in November and December, usually in little trees about ten feet high."

Breeding months, end of August to March.

314.—*GLYCYPHILA ALBIAURICULARIS*, Ramsay.

BROADBENT HONEYEATER.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 45

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 217:

Geographical Distribution.—North Queensland and New Guinea.

Nest and Eggs.—Undescribed.

Observations.—The discovery of this small Honeyeater was due to the energies of that persevering field-collector, Mr. Kendall Broadbent, who first found it in south-eastern New Guinea. In the great folio work of the birds of that country Dr. Sharpe clearly contrasts the species with its close allies.

315.—*ENTOMOPHILA PICTA*, Gould.—(326)

PAINTED HONEYEATER.

Figure.—Gould. Birds of Australia, fol., vol. iv., pl. 50.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 219

Geographical Distribution.—New South Wales, Victoria, and South Australia.

Nest.—The frailest structure possible, most ingeniously suspended by the rim to the twigs and thick drooping leaves of the *Acacia pendula*, and entirely composed of very fine fibrous roots (Gould).

Eggs.—Undescribed.

Observations.—Gould states that this beautiful little Honeyeater is an inhabitant of the interior of New South Wales, where he found it frequenting the myalls (*Acacia*) and other trees bordering the extensive plains.

It is an interesting fact that this interior bird should have been taken on the Upper Yarra. Specimens are in the National Museum, Melbourne, that were shot one November by that indefatigable collector, Mr. Kendall Broadbent, in a wattle-tree near the Kew Asylum.

Gould observed that this rare little creature is very active among the branches, capturing insects on the wing and darting forth and returning to the same spot, much after the manner of Flycatchers. During flight it repeatedly spreads its tail, when the white portion of the feathers shows very conspicuously, while the yellow colouring of the wings also contributes to the beauty of its appearance. Its song is loud and not very harmonious.

The eggs are still a desideratum. The only nest on record was found by Gould on the 5th September, 1839, and contained two nearly-fledged young.

316.—ENTOMOPHILA RUFIGULARIS, Gould.—(328)

RED-THROATED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 52.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 219.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. ii., p. 111 (1878); Kearnland: Victorian Naturalist (1897); Campbell: Proc. Austr. Assoc., vol. vii., p. 602 (1898); North: Trans. Roy. Soc., S A., vol. xxii., p. 153 (1898); Le Souëf: Victorian Naturalist (1899).

Geographical Distribution.—North-west Australia, Northern Territory, and North Queensland.

Nest.—Cup-shaped, neat, and somewhat deep; composed of fine shreds of bark and whitish cottony material; inside lined with grasses only; usually suspended by one side of the rim to a slender twig of a low (baubinia) tree, but occasionally high in a eucalypt. Dimensions over all, about $2\frac{1}{2}$ inches by 3 inches in depth; egg cavity, $1\frac{1}{2}$ inches across by $2\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three; inclined to oval; texture, fine; surface glossy, some slightly so. These eggs vary much, the general type resembling in character those of *Mahuri* or *Acanthiza*, being warm-white, spotted and blotched, particularly round the apex, with reddish-brown or chestnut and purplish-brown. Dimensions in inches of two clutches: A (1) $\cdot 71 \times \cdot 51$, (2) $\cdot 7 \times \cdot 5$, (3) $\cdot 68 \times \cdot 52$; B (1) $\cdot 72 \times \cdot 49$, (2) $\cdot 71 \times \cdot 5$, (3) $\cdot 67 \times \cdot 45$. (Plate 13.)

Another type resembles those of *Ephthianura albifrons*, being white sparingly spotted with purplish-brown from dark to light shades. Dimensions: (1) $\cdot 73 \times \cdot 52$, (2) $\cdot 72 \times \cdot 53$, (3) $\cdot 72 \times \cdot 51$.

A third type resembles those of *Glycyphila modesta*, but is smaller, being white, minutely marked with dark spots.

Observations.—Like the Rufous-breasted (*E. albigularis*), the Red-throated Honeyeater is distributed over Northern Australia. Dr. Ramsay states it has been found breeding in the neighbourhood of Georgetown, in the Gulf of Carpentaria country, during the months from September to March. His examples of nest and eggs were sent to him by Mr. Armit, and were taken in a cork-tree (*Erythrina*).

I had the privilege of critically examining several sets of eggs of the little Red-throated Honeyeater, taken by Mr. G. A. Kearnland, in north-western Australia, where the birds appeared to be numerous, for he informs me he obtained no less than thirty nests between the 20th February and 16th March, 1897, chiefly in the Fitzroy River district. Mr. Kearnland also mentions that the nests were usually situated low in a bauhinia tree, but sometimes were placed high in a eucalypt. The various types of eggs above described are in Mr. Kearnland's collection.

Mr. Kearnland says, at nesting time, which is immediately after the tropical rains of January and February, the Red-throated Honeyeaters become very tame. On several occasions he has stood under a tree within five feet of where the birds were building their nest.

317.—ENTOMOPHILA ALBIGULARIS, Gould.—(327)

RUFOUS-BREASTED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 51.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 219.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 532 (1865).

Geographical Distribution.—North-west Australia, Northern Territory, and North Queensland; also New Guinea and Aru Islands.

Nest.—Cup-shaped, small, deep; composed of narrow strips of soft, paper-like bark of the melaleuca, matted together with small vegetable fibres, and slightly lined with soft grass; suspended from the extremity of a weak projecting branch overhanging water (Gilbert).

Eggs.—Clutch, two to three; rather lengthened in form, and not unlike those of *Malurus cyaneus* in the colour and disposition of their markings, their ground colour being white, thinly freckled all over with bright chestnut-red, particularly at the larger end. Dimensions, 9 lines ($\cdot 75$ inch) \times 6 lines ($\cdot 5$ inch)—(Gilbert). A pair of eggs in the collection of Mr. S. W. Jackson, taken on the Nicholson River, North Queensland, 16th January, 1898, is similar, measuring: (1) $\cdot 76 \times \cdot 53$, (2) $\cdot 72 \times \cdot 52$.

Observations.—All the knowledge we possess at present of the small Rufous-breasted (White-throated of Gould) Honeyeater is limited to Gilbert's keen researches in Northern Australia. He says: "I first met with it on Mayday Island, in Van Diemen's Gulf, where it appeared to be tolerably abundant. I afterwards found it to be equally numerous

in a large inland mangrove swamp near Point Smith. I never observed it anywhere than in swampy situations, or among mangroves bordering deep bays and creeks of the harbours. Its small pensive nest is suspended from the extremity of a weak projecting branch in such a manner that it hangs over the water, the bird always selecting a branch bearing a sufficient number of leaves to protect the entrance from the rays of the sun. I found a nest in the latter part of November, and another in the early part of December, which contained three eggs each, while a third procured towards the end of January had only two. During the breeding season it exhibits considerable pugnacity of disposition, and instead of its usual pretty note, utters a chattering and vociferous squeaking."

318.—ENTOMOPHILA LEUCOMELAS, Cuvier.—(325)

PIED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 49.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 220.

Previous Descriptions of Eggs.—Kearland: Victorian Naturalist (1897),
Campbell: Proc. Austr. Assoc., vol. vii., p. 603 (1898).

Geographical Distribution.—New South Wales, Victoria, South, West, and North-west Australia.

Nest.—Cup-shaped, somewhat shallow; composed of pieces of grass (*Spinifex*), matted well with spiders' web; inside lined with finer grass; usually suspended by the rim in the horizontal forked branchlet of a low tree. Dimensions over all, about 4 inches; egg cavity, about 2 inches across (Kearland).

Eggs.—Clutch, two to three; roundish or round oval in shape; texture fine; surface slightly glossy; colour, soft, warm white or light yellowish-white, finely but strongly spotted all over with sepia or dark umber, intermingled with spots and patches of light or dull grey. Quite exceptional in colour and character to the general rule for Honeyeaters' eggs, and resemble more small eggs of the common Wood Swallow (*A. sordidus*). Dimensions in inches of a clutch: (1) $\cdot 92 \times \cdot 65$, (2) $\cdot 9 \times \cdot 65$, (3) $\cdot 89 \times \cdot 65$; a smaller pair: (1) $\cdot 86 \times \cdot 62$, (2) $\cdot 86 \times \cdot 61$. (Plate 13.)

Observations.—The Pied Honeyeater ranges across Southern Australia. In this species the sexes are totally different in colour, the male being black and white (pied), while the female is light brown. Total length, $6\frac{3}{4}$ inches.

Gilbert says it is a periodical visitor to the west, where it arrives in the latter part of October. He has observed the birds assembling in great flocks, which continue to soar during the greater portion of the day—a rather remarkable trait for Honeyeaters.

However, in the North-west Desert, Mr G A Keartland notices something similar, for he records, "Towards the end of October (1896) flocks of these birds frequently passed us going north."

The knowledge we possess about the rare Pied Honeyeater is somewhat scant. The nest and eggs collected by the late Mr. K. H. Bennett, and described by Dr Ramsay* were no doubt, as Mr. Keartland has pointed out, referable to the Pied Robin (*P. bicolor*), and not the Pied Honeyeater.

I have had the eggs (two clutches) in my collection since 1890, from the Gascoyne district, Western Australia, but as no data accompanied the specimens I was unable to identify them until Mr. Keartland recognised them by a nest he found during the progress of the ill-starred Calvert Expedition through North-western Australia. The nest was found on the 22nd October, 1896, about seven feet from the ground, in a cork-tree, and was among the specimens left at the abandoned depot in the desert. It is melancholy to reflect that this particular nest and single egg were found only a day or two before Mr. Keartland and Mr G L Jones finally parted, the latter, as will be well remembered, perishing from thirst in the sand ridges of that terrible region.

Breeding months, October to March.

319.—MELIPHAGA PHRYGIA, Latham.—(324)

WARTY-FACED HONEYEATER.

Figure—Gould: Birds of Australia, fol., vol. iv., pl. 48

Reference—Cat. Birds Brit. Mus., vol. ix., p. 221

Previous Descriptions of Eggs—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 528 (1865); Ramsay: Trans. Phil. Soc., N.S. Wales, with fig (1865); North: Austr. Mus. Cat., pl. 12, fig 8 (1889); Campbell: Proc. Austr. Soc., vol. vii., p. 675 (1898)

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Cup-shaped, round; composed of strips of soft, brownish bark, with an admixture of spiders' greenish cocoons; inside lined with fine bark, grass, and soft materials, such as wool, hair, &c.; usually placed on a horizontal limb at the junction of a sprouting branch, or in a fork in rough-barked eucalypts, in open forest. Dimensions over all, 4-4½ inches by 2 inches in depth; egg cavity, 2½ inches across by 1¼ inches deep.

Eggs.—Clutch, two; inclined to elliptical in shape; texture fine; surface slightly glossy; colour, rich reddish-buff, darker on the apex, where is a zone of soft or indistinct spots of reddish and purplish-brown, a few spots also appearing over the rest of the surface. Dimensions in inches of a clutch: (1) .96 × .67 (2) .93 × .67 (Plate 14)

* Proc. Linn. Soc., N.S. Wales, vol. vii., p. 414, 1882

Observations.—As Gould remarks, the Warty-faced Honeyeater is not only one of the most handsome of our Honeyeaters, but one of the most beautiful of Australian birds. On account of the beauty of its black and golden plumage, it has been called the "Mock Regent Bird" in some localities. The head, throat, and chest are black, the rest of the plumage in general being beautifully mottled with black and pure yellow. There is a patch of small warty excrescences on either side of the face, hence the distinguishing name, Warty-faced Honeyeater. The bird is $8\frac{1}{2}$ inches long.

The peculiar plaintive song, accompanied with the bowing of the head, of the Warty-faced Honeyeater is very agreeable. The bird may be called an interior species, with a habitat ranging from Queensland down to South Australia, and although Gould regarded it as a stationary species, it occasionally, according to seasons, or the supply of the eucalyptus blossom, wanders towards the coast. I recollect one season in November—1868 or 1869—when these birds were plentiful in the neighbourhood of Oakleigh and Murrumbeena, where we secured as many of their beautifully constructed bark-made nests, and lovely rich salmon-coloured eggs, as we needed. Again, in October, 1882, in the Bendigo district, I observed them breeding.

During the great drought in the interior—1896-7—the Warty-faced Honeyeaters were numerous in Victoria, and were noticed in localities where they had never previously been seen.

Gould somewhat qualifies his statement about the Warty-faced Honeyeater being a stationary species by remarking, "I have occasionally seen flocks of from fifty to a hundred in number passing from tree to tree as if engaged in a partial migration from one part of the country to another or in search of a more abundant supply of food."

I myself witnessed this once at Doncaster, Victoria, 2nd November, 1886, when a flock of about fifty swept past me across a valley.*

Mr. Hermann Lau writes: "Mock Regent Bird.—I first saw it at Goulburn, New South Wales, 1855; then again at Pike's Creek, Queensland, twenty miles south-west of Warroo. It only appears in numbers now and again. The site of its big nest is at about the height of twenty feet in a tree, and always near a thick stem or a few sprouting shoots. It is roughly made of coarse, dry grass, lined with rootlets and animal hair. Deposits two or three eggs. Took nest, Pike's Creek, October, 1869."

Breeding month, end of September to December.

* One of Mr. C. C. Brittlebank's notes reads: "1st April, 1896. Flocks of Warty-faced Honey-eaters, thirty or forty birds in each, passed to the west about 9 a.m."

320.—PTILOTTIS NOTATA, Gould.

YELLOW-SPOTTED HONEYEATER.

Figure —Gould: Birds of Australia, fol., supp. pl. 41.

Reference —Cat. Birds Brit. Mus., ix, p. 227.

Previous Descriptions of Eggs.—North: Austr. Mus. Cat., pl. 13, fig. 4 (1889); also Proc. Linn. Soc., N. S. Wales, 2nd ser., vol. ix, p. 39 (1894); Campbell; Proc. Austr. Assoc., vol., vii, p. 606 (1898); Le Souëf: Ibis, p. 58. (1898).

Geographical Distribution.—Northern Territory and North Queensland; also New Guinea.

Nest.—Cup-shaped, deep; constructed of fibre, coated with large pieces of paper-like melaleuca bark; inside, chiefly the bottom, lined with a white, cottony substance; placed in the forked branch usually of a low bush, but occasionally at the height of thirty feet from the ground, in scrub. Dimensions over all, $3\frac{1}{2}$ to 4 inches by $1\frac{1}{4}$ to 3 inches in depth; egg cavity, $2\frac{1}{2}$ to 3 inches across by $1\frac{1}{2}$ to 2 inches deep.

Eggs.—Clutch, two, rarely three; inclined to oval in shape; texture exceedingly fine; surface very glossy; colour, pearly white, with a few pronounced or bold spots and roundish blotches of deep purplish-brown about the apex. Most resemble the eggs of the Yellow-eared Honeyeater (*P. lewini*). Dimensions in inches of a clutch: (1) $.9 \times .64$, (2) $.88 \times .63$.

Observations.—This Honeyeater is also known as *P. analoga* (Reichenbach), and a dozen other synonyms; but for the sake of simplicity I prefer to retain Gould's name, *P. notata*, which appears under a fine picture of the bird in his folio supplement.

The Yellow-spotted Honeyeater may be said to be the northern and smaller representative of the Yellow-eared (*P. lewini*). Gould says Gilbert collected a bird very nearly allied, if not the Yellow-spotted Honeyeater, at Brown's Lagoon, on the 30th December, 1844, when travelling with Leichhardt from Moreton Bay to Port Essington.

During the Scientific Expedition to Bellenden-Ker Range (1889), the Yellow-spotted Honeyeater was found at all heights up to 4,000 feet.

Mr. A. J. North, who has accurately described the nest and eggs of this bird, states: "Mr. Boyd (Herbert River), has also from time to time supplied me with the following information. A nest of this species he had under close observation from the time it was started until the young left the nest. It was a most curious position selected, the nest being built upon the frond of a fern eighteen inches from the ground, growing in a fernery attached to Mr. Boyd's house, and opposite his office, to which people were constantly coming through the day; a piano also, that was in frequent use by the children, being within fifteen feet of the nest. During the period of incubation the female sat steadily, and did not attempt to fly when looked at by one only three feet away, the nest being so deep that the whole of the bird's body was invisible except the bill. The bird was quite tame, and used to fly backwards and

forwards through the dining-room when a number of persons were seated at dinner. The nest was commenced on the 7th of December, and contained three eggs on the 15th; two young ones were hatched on the 28th, and a third next day—the period of incubation being fourteen days. The young birds left the nest on the 12th January.”

Breeding season, September to March.

The following are the nests, each containing two eggs, taken at Cape York, by Mr. Harry Barnard, 1896-7, viz.:—In October, one; November, two; January, two; February, three; and March, one.

321.—PTILOTTIS GRACILIS, Gould.

LESSER YELLOW-SPOTTED HONEYEATER.

Figure.—Ibis, pl. i. (1898).

Reference.—Gould: P.Z.S., 1886, p. 217.

Previous Descriptions of Eggs.—(?) Ramsay: Proc. Linn. Soc., N.S. Wales. 2nd ser., vol. i., p. 1150 (1886); Le Souëf: Ibis, p. 56 (1898); Campbell: Proc. Austrn. Assoc., vol. vii., p. 607 (1898).

Geographical Distribution.—Northern Queensland.

Nest.—Cup-shaped; comparatively small and roundish; composed chiefly of moss, ornamented outwardly with small pieces of grey bark, sometimes with a darker coloured bark and insect cocoons; neatly lined inside with a white, silky substance; usually situated about ten or twelve feet from the ground, in scrub. Dimensions over all, $2\frac{1}{2}$ to 3 inches by $1\frac{3}{4}$ to 3 inches in depth; egg cavity, $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two; round oval in form; texture fine; surface slightly glossy; colour, rich fleshy-tint or salmon-pink, marked moderately but somewhat boldly, and particularly round the upper quarter, with rich pinkish-crestnut and a few purplish spots. The eggs, being amongst the most richly-coloured of Australian Honeyeaters', are exceedingly beautiful. Dimensions of a clutch in inches: (1) $.8 \times .6$, (2) $.79 \times .6$.

Observations.—As already mentioned, there have been more synonyms and confusion than enough, so much have doctors differed about the identification of the Yellow-spotted Honeyeaters of Northern Australia and contiguous localities.

Finally, Dr. Sharpe has classified them into three races, according to geographical distribution. Whether there be races, varieties, or species, from an oological point of view (which is a somewhat sound one, for “by their fruits ye shall know them”) there are certainly two distinct Yellow-spotted Honeyeaters other than *P. lewini* inhabiting Northern Queensland, and which it appears Gould has clearly pointed out—first, the larger bird, *P. notata*, and second, the smaller species, *P. gracilis*. The birds are precisely similar in appearance save in size; yet, while the eggs of the former resemble those of its southern cousin, *P. lewini*, being white, with a few dark spots, the others, besides being

proportionately smaller, are a fleshy tint and richly coloured. The decided difference in the two classes would appear constant, judging by the series of eggs, identified by skins of both kinds of birds shot from the nests, which I had the opportunity of examining with Mr. Dudley Le Souëf, at the Zoological Gardens, Melbourne.

When collecting at Cape York, 1896-7 season, Mr. Harry Barnard took nine or ten nests, each containing two eggs of *P. notata*, and four nests—three each two eggs, the other a single—of *P. gracilis*. There are also birds and eggs of both kinds in the collection of Mr. Le Souëf, which he brought down from the Bloomfield River district.

I hardly know that I am correct in giving as a reference Dr. Ramsay's description of the eggs taken near Cairns by Mr. Bowyer-Bower, as belonging to those of the smaller species. The rich colouration—"nearest to those of *P. auricomis*"—agrees, but not the dimensions.

Breeding months for the Lesser Yellow-spotted Honeyeater, October to January.

322.—*PTILOTIS FUSCA*, Gould.—(319)

FUSCOUS HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 44.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 229.

Previous Descriptions of Eggs.—Ramsay: Trans. Phil. Soc. New South Wales, with fig. (1865); Campbell: Southern Science Record (1883); also Proc. Austrn. Assoc., vol. vii., p. 608 (1898).

Geographical Distribution.—Queensland, New South Wales and Victoria.

Nest.—Cup-shaped, neat; composed of shreds of brownish bark, matted with spiders' web and cocoons; lined inside with fine shreds of bark, a few rootlets or grass stalks, hair, and sometimes the silky down from seed vessels or cotton material, gathered in the neighbourhood of habitations; usually placed among the branchlets at the end of a horizontal eucalypt bough. Dimensions over all, $2\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, one to three, but usually two; oval or roundish in form; texture of shell fine; surface has a faint trace of gloss; colour, rich salmon or buff, marked more or less distinctly about the apex with pinkish-red and purplish-brown. Dimensions in inches of a pair: (1) $\cdot77 \times \cdot56$, (2) $\cdot73 \times \cdot6$.

Observations.—The range of the Fuscou Honeyeater extends from Northern Queensland down to, probably, South Australia.

Although this Honeyeater is not distinguished by any brilliancy of colour, Gould has painted it in a pretty word picture. Referring to the bird in the brushes of New South Wales, he says, "In the months of August and September, when the beautiful *Tecoma* is in blossom, the

Honeyeater may be seen flitting about among the thick clusters of the pendant flowers, in search of insects, which are sometimes captured on the wing, but more generally extracted from the tubular florets."

From brushes to back yards—Mr. North mentions that in the winter months small flocks of these birds used to visit his yard at Dobroyde, near Sydney, regularly every day, to be fed on bread crumbs.

In the Bendigo district, Victoria, towards the Campaspe River, I once came upon quite a number of Fuscous Honeyeaters feeding upon grevillea bushes that grew in a snug hollow in an ironbark (*Eucalyptus*) forest. I did not see a nest, however, until I went to Coomooboolaroo, Queensland, where I observed one suspended among the flowering branchlets of a eucalyptus near the lagoon.

The Messrs. Brittlebank have found a number of these birds' nests in a patch of eucalypts near the Werribee River, above Bacchus Marsh, Victoria, where I likewise enjoyed hearing the jolly little songs of these birds.

The Messrs. Barnard informed me that, like many other birds, the Fuscous Honeyeater lays according to the season; if droughty one or two eggs are laid, if the season be good three are deposited. Once a clutch of four was taken, which is, of course, an exceptional complement.

Breeding months, usually August to December, or later, but occasionally as early as June and July in Queensland.

323.—PTILOTTIS LEWINI. Swainson.—(396)

YELLOW-EARED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 32.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 229.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 504 (1865); Ramsay: P.Z.S., p. 595 (1875); North: Austr. Mus. Cat., p. 199, pl. 13, fig. 1 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 609 (1898).

Geographical Distribution.—Queensland, New South Wales and Victoria.

Nest.—Cup-shaped, deep, with substantial walls; constructed chiefly of strips of bark (*Melaleuca*, &c.), and spiders' cocoons, generally outwardly beautifully covered with moss; lined inside with thick, warm ply of a downy or silky substance, such as thistle-down or other soft seeds, varying in colour—white, brown, or yellowish—according to the locality or the species of plant from which the seeds are gathered; usually attached to the twigs of a thick bush or tree in scrub and forest country alike. Dimensions over all, $3\frac{1}{2}$ to 4 inches by $2\frac{1}{2}$ to 3 inches in depth; egg cavity, $2\frac{1}{4}$ to $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ to $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, two to three, usually the former number; nearly true oval in shape; texture of shell fine; surface glossy; colour, white,

very sparingly marked with spots and dots of dark purplish-brown, almost black, most of the markings being on the apex or about the upper quarter. Dimensions in inches of a proper pair: (1) $\cdot96 \times \cdot7$, (2) $\cdot96 \times \cdot7$; of a full and larger sized clutch: (1) $1\cdot07 \times \cdot72$, (2) $1\cdot05 \times \cdot72$, (3) $1\cdot02 \times \cdot72$. (Plate 14.)

Observations.—This fine Honeyeater is common to the forests and scrubs of Eastern Australia, chiefly in the coastal region. It is doubtful whether it is found at Cape York. I am not certain whether they frequent the Cape Otway forest, but I have observed the bird as far south as the Dandenongs, near Melbourne, where I have often heard, as Gould describes it, its loud, ringing, whistling song. In Gippsland, in the autumn, I have observed Lewin's or the Yellow-eared Honeyeater feeding in the forest clearings on the fruit of the so-called Kangaroo-apple bush (*Solanum*). Yellow-eared is the better name, for it has a conspicuous oval spot of light yellow behind each ear, the general colour of the plumage being olive-green. Dimensions in inches: length $7\frac{1}{2}$, wing $3\frac{5}{8}$, tail $3\frac{5}{8}$, bill $\frac{3}{4}$, tarsus $\frac{7}{8}$.

The first nest I found of this species was in October, 1885. It was about ten or twelve feet from the ground in scrub, near the Fitzroy River, Queensland. The eggs, however, were addled, but there was no mistaking the identity of them and the nest, with its beautiful lining of white silky substance.

The next nest that came under my observation was in the "Big Scrub," Richmond River, New South Wales, where the birds are exceedingly numerous, and where I often admired their graceful actions while pirouetting in mid-air after insects. The nest, which contained two eggs, was brought to me by scrub-fellers, who reported that it originally contained three eggs (the number being usually a pair), and was taken in a thick bush, about four feet from the ground. The nest was constructed of moss and dead leaves, and was lined with grass and a thick, warm ply of thistle-down. Date, 18th November, 1891.

Gould describes a nest—the first recorded of this species—he found prettily situated in a creeper which overhung a small pool of water in a gully under the Liverpool range.

According to the Australian Museum "Descriptive Catalogue," Dr. Ramsay, on the 29th December, 1871, took two eggs on the Mary River, Queensland, which were probably the specimens referred to in the P.Z.S. (1875), but for which no dimensions were furnished.

A nest of the Yellow-eared Honeyeater, taken near Melbourne, in a musk-tree in the Dandenongs, is large, and composed of beautiful green moss interlaced with strips of brownish-coloured bark, and lined inside with a thick ply of the whitish cotton-like substance evidently gathered from the underside of the leaves of the blanket-wood (*Senecio*). Dimensions—outward, 4 to 5 inches across by 4 inches deep; inside, $2\frac{1}{2}$ to 3 inches across by 2 inches deep. Near the same locality, after a picnic party had departed, I and some other persons were entertained by one of these fine Honeyeaters, which descended close by and ate with a relish some particles of preserved fruit that were left.

Breeding months, September to December or January.

324.—PTILOTES FRENATA, Ramsay.

BRIDLED HONEYEATER.

Figure.—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 49.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 231.

Previous Description of Eggs.—North: Records Australian Museum, vol. ii. (1892).

Geographical Distribution.—North Queensland.

Nest.—Cup-shaped; composed of long pliant stems of a climbing plant and portions of the soft reddish-brown stems of a small fern; inside neatly lined with a white, wiry, vegetable fibre, forming a strong contrast to the reddish-brown colour of the exterior. Dimensions over all, 4.25 inches by 2.6 inches in depth; egg cavity, 2.5 inches across by 1.6 inches deep (North).

Eggs.—Clutch, two; oval in form, tapering gradually to the smaller end, and are white, with minute dots and round markings of purplish-black and brownish-grey, the latter colour appearing as if beneath the surface of the shell; as usual, the markings predominate on the thicker end, where in places they become confluent and form an irregular zone; with the exception of these zones the markings on one of the specimens are larger and more sparingly dispersed, in the other they are uniformly distributed over the greater portion of the shell. Dimensions in inches: (1) .93 × .65, (2) .95 × .65 (North).

Observations.—This very fine northern Honeyeater is only known to exist in the Rockingham Bay district, chiefly in the ranges. It is found as far north as the Bloomfield River. Mr. Kendall Broadbent, when collecting for Dr. Ramsay, first found the species in the Cardwell district, where a few individuals were obtained frequenting blossoming eucalypts near the margin of a swamp. It only appears in summer, arriving in the rainy season.

I think it was this species we found in Dalrymple's Gap, feasting in numbers upon the heads of long, erect, flowering spikes, of a dark-red colour, of the graceful umbrella-tree (*Brassaia*).

Through the Records of the Australian Museum we learn that the first recorded nest of the Bridled Honeyeater was found by Mr. W. S. Day, at Cairns, on the 28th November, 1891. It was placed in a mass of creepers growing over a small shrub at a height of about three feet from the ground. The nest was built of stronger materials than is usual for the species, and unattached at the rim. The eggs (two), which were partially incubated, were also unlike those typical of *Ptilotes*, approaching nearer in colour and the disposition of their markings those of some members of the Wood Swallows (*Artami*). The parents were also procured.

325.—PTILOTIS MACLEAYANA, Ramsay.

P. flavistriata, Gould.

YELLOW-STREAKED HONEYEATER.

Figure—Gould-Sharpe: Birds of New Guinea, vol. iii., pl. 50.*Reference*.—Cat Birds Brit Mus., vol. ix., p. 232.*Previous Description of Eggs*.—North. Proc. Linn. Soc., N S. Wales, vol. xxiii., p. 380 (1898).*Geographical Distribution*.—North Queensland.

Nest.—Deep, cup-shaped, suspended by the rim to a thin, forked horizontal twig; composed chiefly of cocoa-nut fibre, with which is intermingled on the lower portion a few broad leaves, skeletons of leaves, the paper-like bark of a melaleuca, egg bags of spiders, &c.; lined inside entirely with cocoa-nut fibre. Dimensions over all, $3\frac{1}{4}$ inches by 4 inches in depth; egg cavity, $2\frac{1}{4}$ inches across by $2\frac{1}{2}$ inches deep (North).

Eggs.—Clutch, two; oval in form; texture of shell fine; surface slightly glossy; colour, pale fleshy-buff, sprinkled with numerous distinct but very minute dots and freckles of chestnut-red, which are darker and more thickly disposed on the larger end, where they are intermingled with a few underlying markings of dull violet-grey. Dimensions in inches: (1) $\cdot92 \times \cdot67$, (2) $\cdot9 \times \cdot67$ (North).

Observations.—This exceedingly fine and rare species of Honeyeater appears partial to the creek scrubs in the Rockingham Bay district, where Mr. Kendall Broadbent first collected a small parcel. One specimen he gave to Mr. Waller, of Brisbane, who in turn forwarded it to Gould, who described and figured it as *P. flavistriata*.

In some notes sent to the Zoological Society (1868), Dr. Ramsay mentioned this bird as being the young of *P. versicolor*, from a single specimen collected by Mr. Edward Spalding at Cardwell. Subsequently, the same collector shot several fine specimens of the bird near Cooktown, which the Doctor described before the Linnean Society of New South Wales, 25th January, 1875, naming the bird *Ptilotis macleayana*, in honour of the President. The description was published 27th April following, therefore the Australian name takes precedence of Gould's *flavistriata*, which was not described till later.*

In my paper, "Nests and Eggs of the Honeyeaters,"† I fell into the same error as the British Museum "Catalogue," by stating that *P. macleayana* was synonymous with *P. versicolor*; I should have said with *flavistriata*, to which it is more closely allied.

* P.Z.S., 1875, p. 315.

† Proc. Austr. Assoc., vol. vii., p. 614.

The yellow chest streaks, which are such a conspicuous feature in the bird's appearance, suggested the name *flavistriata* to Gould—hence the good descriptive vernacular name, "Yellow-streaked" Honeyeater. Mr. North's vernacular name, "Sir William Macleay's" Honeyeater, is somewhat inconveniently long. Moreover, it was decided by the "Vernacular Names for Australian Birds Committee"* that the strictly complimentary place for an author's or a naturalist's name was in the scientific title of the bird. (Of course there may be exceptions to this rule.)

The original nest of the Yellow-streaked Honeyeater was discovered by Mr. J. A. Boyd in a mango-tree near the Herbert River, 16th December, 1896.

Two skins of this interesting bird are mounted in the National Museum, Melbourne.

326.—*PTILODIS SONORA*, Gould.—(307)

SINGING HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 33.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 234.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 505 (1865); North: Austr. Mus. Cat., p. 200 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 612 (1898).

Geographical Distribution.—Australia in general, especially the interior.

Nest.—Cup-shaped, deep; in Western Australia substantially interwoven and constructed of strong green-gathered grass, lined inside with wool, cow-hair, long horse-hairs, &c.; usually suspended in a bush or tree in open forest country. Dimensions over all, $3\frac{1}{2}$ inches by 3 inches in depth; egg cavity, 2 inches across by $1\frac{3}{4}$ inches deep.

In eastern parts the nest is somewhat thinner, the grass being matted with spiders' web, while the lining is fibrous rootlets. Dimensions over all, $2\frac{1}{2}$ inches by $1\frac{1}{4}$ inches in depth; egg cavity, 2 inches across by 1 inch deep.

Eggs.—Clutch, two to three; oval in shape; texture of shell fine; colour, a delicate pinkish-buff, or beautiful fleshy-tint, having the appearance of a darker shade in the form of a cap on the apex, this dark patch being really formed by a coalescence of numerous indistinct specks. At first sight the eggs closely resemble those of the Pallid Cuckoo (*C. pallidus*). Dimensions of a clutch in inches: (1) $\cdot 81 \times \cdot 6$, (2) $\cdot 81 \times \cdot 6$, (3) $\cdot 8 \times \cdot 59$. (Plate 11.)

Observations.—The Singing Honeyeater may be described as being dark above, under surface pale in colour, striped with light-brown.

There are three distinct markings on the side of the face—black, yellow, and white respectively. Taking it altogether it is a shapely bird, with dark-brown eyes. Its size is about that of Lewin's.

I do not think any Honeyeater enjoys such a widespread range as the Singing Honeyeater, which has been observed in almost every part of the Continent, the heavier-forested parts excepted. I have had the pleasure of finding their nests and delicately coloured flesh-tinted eggs both in the east and in the west of Australia, therefore I am able to attest to the difference of structure (the nests of the western birds being the heavier built) as pointed out by Gould.

The first nest I took (October, 1884) was in the Mallee country, near Nhill, Victoria, where I observed the birds building in a bull-oak (*Casuarina*), and subsequently obtained a pair of beautiful eggs from it. My last find was a well-built nest placed a few feet from the ground in a short growth of tea-tree (*Melaleuca*) scrub, Quindalup (West Australia). This nest, from which I flushed the bird, contained a lovely set of three eggs. The Singing Honeyeater is one of the most common birds I met with in Western Australia. It is found breeding in orchards, where I noticed old nests in orange and lemon trees. In one garden I watched a fine bird clinging to a large head of bluish flowers (*Echium*), busily probing each flower for honey with the same rapidity as a domestic fowl would pick up grain.

Why is the bird called the "Singing" Honeyeater? Gould says its song is "full, clear, and loud." All I could ever hear, save a few chattering notes, was "er-rook, er-rook," uttered while the bird, with graceful flight, passed from tree to tree.*

Mr. Hermann Lau, in his M.S. notes from Darling Downs (Queensland), says:—" *Ptilotis vittata (sonora)*, locally called the Large-striped Honeyeater, gets its name from the yellow line over the eyes. This bird loves hanging its cradle on the lower branches of a casuarina, near water, on the outskirts of a thicket. The cradle, or rather hammock, is made of grass, with rootlets for a floor; has sometimes three eggs. Cunningham's Gap, October, 1876."

Writing to me from Yorke Peninsula (South Australia), Mr. James G. Macdougall includes a curious note:—"The Singing Honeyeater builds a small and airy nest of wool, hair, and fine grass interlaced with twigs of tea-tree and she-oak, without lining; eggs, two, but sometimes three. In October, 1886, I found a nest of this bird tenanted by two hens, and containing five eggs, three of which were the usual colour and two pure white."

Breeding season includes the months from the end of July or the beginning of August to December. Several clutches of these eggs were taken in West Australia by the Calvert Expedition during August, 1896. Occasionally they were the only kinds observed on the sandhills.

* A late note from Mr. Tom Carter, North-West Cape, where the bird is a common resident, states:—"The Singing Honeyeater has not much variety of song, although it makes a great many calls at this season (June) just at dawn. The birds are numerous in the thickets, where you may hear them singing one against another. Although only a double note, numbers make quite a chorus."

327.—PTILOTIS VERSICOLOR, Gould.—(308)

VARIED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 34

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 234

Geographical Distribution.—North Queensland and New Guinea.

Nest and Eggs.—Undescribed.

Observations.—The Varied Honeyeater is one of the finest species of its family. Little is known of its economy.

328.—PTILOTIS CHRYSOPS, Latham.—(320)

YELLOW-FACED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 45.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 236.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 521 (1865); North; Austr. Mus. Cat., p. 208, pl. 12, fig. 16 (1889); Campbell: Proc. Austr. Assoc., vol. vii p. 614 (1898).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Elegant, cup-shaped, deep, with swollen sides; somewhat frailly constructed of fine curly pieces of beautiful moss intermingled with spiders' web, sometimes with fine shreds of bark added; inside lined with very fine light-coloured rootlets and pieces of grass; usually situated in a low bush, particularly a melaleuca or leptospermum, overhanging a stream, or sometimes sewn, as it were, by the rim with cob-web to a fern (bracken) frond. Dimensions over all, 3 inches by 2½ inches in depth; egg cavity, 2 inches across by 2 inches deep.

Eggs.—Clutch, two to three; lengthened in form; texture, fine; surface slightly glossy; colour light reddish or pinkish-buff, marked and freckled all over, and in a confluent patch round the apex, with rich, reddish-chestnut and purplish-grey; the eggs are singular for this genus, and somewhat resemble those of the Miner (*Myzantha garrula*) in miniature. However, some examples are whiter in the ground-colour, with round spots about the apex. Dimensions in inches of a proper pair: (1) .82 × .57, (2) .74 × .54. (Plate 14.)

Observations.—The cheerful Yellow-faced Honeyeater, as Gould states, may be regarded as a common species, and inhabits all the eastern States, more particularly the coastal regions. It is very des-

tructive to fruit, and is especially fond of grapes. Mr. North states it is one of the most common species of the genus *Ptilotis*, inhabiting the parks and gardens of Sydney. It is probably nowhere more numerous than in Victoria, where it may be heard (often at early morn) by its happy, chirrup-like song, near forest streams, or in scrub by river margins.

The moss-bedecked nest and the typical red-mottled eggs of the Yellow-faced Honeyeater are exceedingly beautiful. Many I have found, notably at Lilydale and Upper Werribee. At the latter locality I specially remember a very pretty nest situated in a charming spot. It was suspended in an acacia bush, in blossom, that hung over a moss-covered bank of a dry watercourse in a silent and sheltered nook of an ironbark forest. (Date, 11th October, 1890.) The first nest of this species I took was at Malvern, 1869. The eggs were the exceptional type, more distinctly spotted, like those of its White-plumed cousin (*P. penicillata*). The only other eggs I found of this type were obtained at Berwick, January, 1880.

GoULD found a nest near the Liverpool Ranges, which was so thinly constructed that he could see through it. Such examples I have noticed myself, when the eggs could be seen from beneath.

Mr. Hermann Lau's observations of the Yellow-faced Honeyeater in Southern Queensland are that it is usually found in the sea-coast scrubs, and places its nest in a small bush, four to six feet high. The nest consists of dry grass outside, and feathers and rootlets for lining; lays two eggs.—Cunningham's Gap, October, 1876.

The little Yellow-faced Honeyeater is not only lively and cheerful, but is persevering, as the following observations of Mr. and Mrs. De Lany attest. On the Wombat Creek, near Omco, Victoria, a pair built in a shapely blackwood (*Acacia*) in the garden. As the site was rather near the fruit trees, the nest and eggs were taken, but next day in the same tree a new nest was found nearly completed, both birds working at it, and before the week was out it had eggs. Again the nest was robbed, and so on for six times, each clutch being the full complement of three eggs. However, the seventh time (there is luck in odd numbers, as the saying goes) the birds won by building a nest near the ground in a low bush about ten paces distant from the blackwood tree, which was not discovered till it contained young.

Breeding months July to February. Mr. C. C. Brittlebank and I observed birds building a nest on the bank of the Lerderberg River, 6th February (1892). Mr. C. F. Belcher, in his pleasantly-written article in the "Wombat," "Notes on Birds of the Geelong district," mentions a pair of eggs he took at Lake Connewarre as late as the 12th February (1890).

329.—PTILOTIS FILIGERA, Gould.—(321)

STREAK-NAPED HONEYEATER.

Figure.—Gould. Birds of Australia, fol., supp., pl. 42

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 237.

Geographical Distribution.—Northern Territory and North Queensland, also New Guinea and Aru Islands.

Nest and Eggs.—Undescribed.

Observations.—Gould reckoned that the Streak-naped Honeyeater was more nearly allied to the White-gaped Honeyeater (*P. unicolor*) than to any other, but is strikingly different from all its congeners by the thread-like streak beneath the ear coverts, and by the small striæ which decorate the back of the neck, hence the very appropriate vernacular name, Streak-naped Honeyeater.

The original specimens described by Gould were among the novelties which rewarded the researches of Mr. James Wilcox, who obtained two examples among the mangroves at Cape York.

330.—PTILOTIS FLAVIGULARIS, Gould.—(310)

YELLOW-THROATED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 35

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 239.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848), also Handbook, vol. i., p. 509 (1865); North: Austr. Mus. Cat., p. 201, pl. 12, fig. 13 (1889); also Rec. Aust. Mus., vol. i. (1891); Campbell: Proc. Austr. Assoc., vol. vii., p. 616 (1898).

Geographical Distribution.—Tasmania, and some of the larger islands in Bass Strait, notably King and Flinders.

Nest.—Cup-shaped, deep; outwardly constructed of bark (*Melaleuca*), fine twigs, grass, and spiders' cocoons; inside warmly lined with fur, hair, wool, &c.; usually placed low in a thick bush or in scrub. The nest is not unlike that of *P. leucotis* of the mainland. Dimensions over all, 4 inches by 3½ inches deep; egg cavity, 2¼ inches across by 2 inches deep.

Eggs.—Clutch, two to three (three to four, Brent); inclined to oval in shape; texture of shell fine; surface slightly glossy; colour, warm or pinkish-white, sparingly spotted with reddish-brown or chestnut and purplish-grey. Dimensions of odd examples: (1) .93 × .7, (2) .91 × .67.

Observations.—The exceedingly fine Yellow-throated Honeyeater is well named for its beautiful colouring on the throat, its general plumage being olive-yellow. It is an insular form confined to Tasmania and some of the islands in Bass Strait, notably King Island and Furneaux Group. In the last-named localities we procured birds and nests during the expeditions (1887 and 1893) of the Field Naturalists' Club of Victoria.

On King Island two nests were found in low bushes, and were warmly furnished with a thick ply of opossum's fur. Our specimens of birds were easily procured. All that was necessary was to imitate their whistle-like "tchook, tchook" call notes, when a poor bird would answer and fly into the tree overhead its deceiver, from whence it easily fell to a half charge of dust shot.

Strolling through the scrub on Flinders, I watched a pair of Yellowthroats chevying each other through the trees. A butterfly crossed in front, diverting the attention of the foremost bird, which instantly captured it and flew to a tree. Devouring the insect, the bird wiped its bill on the branch, with evident satisfaction, and made off again.

An unoccupied nest I found in a tea-tree thicket is not unlike that of the White-eared Honeyeater of the mainland, being constructed of bark, grass, and spiders' cocoons, but lined with wool and feathers instead of hair only. However, in Tasmania the Yellow-throated Honeyeater has been seen gathering hair for its nest from live animals, even "human" animals, for Mr. A. E. Brent gives me the following amusing story:—

He and a companion were hiding among ferns (bracken) in a deep gully watching for Hawks. A Yellow-throated Honeyeater was noticed poking about as if it had a nest near. They took off their hats so as not to attract the bird's attention. The bird hopped around, then alighted upon one of their heads, and commenced tugging at the hair, which would not yield like the fur of a marsupial. The bird tugged harder, but the hair slipping through its bill caused the bird to turn a semi-somersault backwards, which made Mr. Brent and his companion laugh so that the bird was scared away. The nest in process of building was found about fifteen paces away.

Gould found a nest containing young (28th September, 1839). He also described the nest, its situation, and eggs.

Two young ones of this species, mounted in the Hobart Museum, are as yellow as Canaries. There were originally three of these curiously freaked youngsters in the nest.

Breeding months August to December.

331.—PTILOTIS FASCIOGULARIS, Gould.—(309)

FASCIATED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., supp., pl. 40

Reference.—Cat, Birds Brit. Mus., vol. ix., p. 240.

Geographical Distribution.—Queensland.

Nest and Eggs.—Undescribed.

Observations.—These finely-shaped Honeyeaters, which, as Gould points out, differ from the other members of the genus in the distinct bars of pale-yellow and brown which mark the throat and fore part of the neck, are generally found in belts of mangroves on the Queensland coast, and adjacent low, swampy islands, and are sometimes called the Island Honeyeater. During an excursion with Mr. A. W. Milligan, on the Lower Fitzroy, we found the birds making the mangroves merry with their pleasant notes. The birds were extremely shy, nevertheless we succeeded in procuring a couple of skins.

332.—PTILOTTIS LEUCOTIS, Latham.—(311)

WHITE-EARED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 36.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 240.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); North: Austr. Mus. Cat., p. 201, pl. 13, fig. 5 (1889); also app. ii. (1890); Campbell: Proc. Austr. Assoc., vol. vii., p. 618. (1898).

Geographical Distribution.—Australia in general, except North.

Nest.—Cup-shaped, deep; well constructed of fine bark and grass, matted together with spiders' cocoons; lined inside with a warm ply of cow or other hair; usually placed near the ground in a thick bush or in low scrub. Dimensions over all, $3\frac{1}{2}$ inches to 4 inches by $2\frac{1}{2}$ to $3\frac{1}{2}$ inches in depth; egg cavity, 2 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two usually, three occasionally; stout oval; texture fine; surface slightly glossy; colour, almost white, but sometimes of a delicate flesh-tint, sparingly but distinctly marked and spotted with pinkish-red, the spots being more about the upper quarter. Dimensions in inches of a proper pair: (1) $\cdot86 \times \cdot64$, (2) $\cdot85 \times \cdot63$.

Observations.—This fine, showy Honeyeater, with conspicuous white ears, is not an uncommon bird in lightly-timbered and heathy tracts of country in Victoria and other southern parts. It is a scarce bird in Western Australia. I fancy Dr. Ramsay's north-west habitat for this species needs verification; however, although not mentioned in the "List of Birds" of the Calvert Expedition, Mr. Keartland informs me a specimen was procured near the tropics.

The bird is an early breeder. I had always to be afield in the coastal scrubs about the beginning of September if I wanted fresh eggs. The nest is difficult to find amongst the acres of thick, short scrub, and frequently is only detected by watching the movements of the bird, which at all times are exceedingly wily. My greatest find of White-

careed Honeyeaters' nests was in 1883, if I recollect rightly—when I found three nests all situated about a foot from the ground, and lined with a thick warm ply of cow-hairs wonderfully woven.

It is interesting to watch the birds plucking hair off while perched on the backs of cattle, and rather a difficult task it proves for the bird to effect lodgment, especially if the cow patronised be not in an amiable mood, when she tosses her head angrily and switches her tail from flank to flank, while the bird, fluttering over, waits an opportunity to dodge the appendage, and between each lash plucks a few hairs till a mouthful is obtained, then flies to its nest.

Mr. G. E. Shepherd, Somerville, Victoria, has enjoyed a somewhat comical experience with nest-building White-eared Honeyeaters. They have actually plucked hairs from his horse when he was riding through the scrub. No doubt before cattle were introduced to Australia, this beautiful Honeyeater furnished its nest with the hair or fur of kangaroos and other indigenous animals.

Mr. C. F. Belcher has observed that the same pair of White-eared Honeyeaters will build within a few feet of the same spot year after year.

Breeding months from the end of August to December.

333.—PTILODIS COCKERELLI, Gould.

COCKERELL HONEYEATER.

Figure—Gould: Birds of Australia, fol. supp. pl. 43.

Reference. Cat. Birds Brit. Mus., vol. ix, p. 241.

Geographical Distribution.—North Queensland.

Nest and Eggs.—Undescribed.

Observations.—Of this rare Honeyeater Gould writes: "It is but an act of justice that at least one of the birds of Australia should be named after Mr. James Cockerell, inasmuch as he is a native-born Australian, has collected very largely in the northern parts of that great country, and discovered more than one new species, amongst which must be enumerated the present very interesting bird."

Mr. Cockerell found his namesake frequenting the little-explored parts of Cape York Peninsula, often in company with the Blue-bellied Loricket and the Yellow-spotted Honeyeater.

When Mr. Harry Barnard was collecting for Mr. D. Le Souëf and others during the breeding season of 1896-7, at Cape York, he met with the Cockerell Honeyeater, but did not succeed in procuring its nest.

334.—PTILOTIS AURICOMIS, Latham.—(312)

YELLOW-TUFTED HONEYEATER.

Figure.—Gould : Birds of Australia, fol., vol. iv., pl. 37.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 242.

Previous Descriptions of Eggs.—Ramsay : Ibis, p. 243 (1864) ; Gould : Birds of Australia, Handbook, vol. i., p. 512 (1865) ; North : Austr. Mus. Cat., pl. 12, fig. 14 (1889) ; Campbell : Proc. Austr. Assoc., vol. vii., p. 619 (1898).

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest.—Cup-shaped, substantial ; constructed of fine strips of brownish-coloured bark (chiefly), and grass matted with cocoons, sometimes of various colours ; inside lined with grass, and on the bottom with soft reeds—thistle, clematis, &c. ; usually suspended in a creeper, sapling, or small tree in open forest country. Dimensions over all, $3\frac{1}{2}$ to 4 inches by $2\frac{1}{4}$ to 3 inches in depth ; egg cavity, $2\frac{1}{4}$ to $2\frac{1}{2}$ inches by $1\frac{1}{2}$ to 2 inches deep.

Eggs.—Clutch, two to three ; short in form, abruptly compressed towards one end ; texture, fine ; faint trace of gloss on surface ; colour, rich or pinkish-buff, darker on the apex ; moderately and finely spotted with pinkish-red or rufous and purplish-grey, the majority of the markings being about the larger end. Dimensions of a clutch in inches : (1) $\cdot 85 \times \cdot 66$, (2) $\cdot 82 \times \cdot 63$. (Plate 14.)

Observations.—The Yellow-tufted Honeyeater has a beautiful, rich, golden-tinted plumage, especially on the under surface, with a lengthened tuft of extremely rich yellow feathers extending backwards from the ear.

This exceedingly handsome and attractive Honeyeater favours the more inland portions of South Queensland, New South Wales, and Victoria, and especially loves ironbark (*Eucalyptus*) forests. It has a characteristic and high-pitched call note.

Some species of Honeyeaters are gregarious at times. Towards the end of one summer (March, 1889) I witnessed the unusual sight of about one hundred or more of the beautiful Yellow-tufted Honeyeaters flying in a flock northward across the rich flats of Bacchus Marsh.

I have observed Yellow-tufted Honeyeaters nesting in the ironbark saplings near Bendigo, also on the Upper Werribee, but was always unfortunate in the matter of securing eggs. A nest from the latter locality, found in a golden wattle (*Acacia*) sapling, was somewhat large, deep, and firmly built of fine strips of reddish strings of bark, together with spiders' cocoons, and was lined inside with finer shreds of the same coloured bark, thistle-down, and such-like soft seeds.

The eggs in my collection are from Dr. Ramsay, who has enjoyed early and delightful nesting experiences with this beautiful Honeyeater, and whose remarks I make no apology for quoting at length : "This species remains with us in the neighbourhood of Sydney throughout the

whole year, breeding earlier than the generality of Honeyeaters. We have eggs in our collection taken early in June, and as late as the end of October, during which month they sometimes have a third brood. August and September seem to be their principal months for breeding. Upon referring to my note-book, I find that I captured two young birds well able to fly, on the 18th of July, 1863; but during some seasons birds breed here much earlier than in others. The nest is a neat but somewhat bulky structure, open above, and composed of strips of the stringy-bark (*Eucalyptus obliqua*). The total length of the nest is about four inches by from two inches and a-half to three inches wide, being two inches deep by one inch and a-half inside. The eggs, which are usually two in number, are of a pale flesh-pink, darker at the larger end, where they are spotted and blotched with markings of a much deeper hue, inclining to salmon-colour; in some, the markings form a ring upon the thick end, in others, one irregular patch with a few dots upon the rest of the surface. When freshly taken, they have a beautiful blush of pink, which they generally lose a few days after being blown. Their length is from ten to eleven lines by seven to eight in breadth. Some varieties have a few obsolete dots of faint lilac; others are without markings, save one patch at the top of the larger end. Like most of our Australian birds' eggs, they vary much in shape and tint of colour. The site selected for the nest is usually some low bushy shrub, among the rich clusters of *Tecoma australis*, or carefully hidden in the thick tufts of *Blechnum* (*B. cartilagineum*), which often cover a space of many square yards. In these clumps, where it clings to the stems of ferns, I have several times found two or three pairs breeding at the same time within a few yards of each other. The ferns and *Tecomæ* seem to be their favourite places for breeding, although the nests may often be found placed suspended between forks in the small bushy oaks (*Casuarina*). In the nest of this Honeyeater, I have several times found the egg of the *Cuculus inornatus* (*pallidus*).

The following is an interesting note kindly sent to me by Mr. C. C. Brittlebank: "Yellow-tufted Honeyeaters' nests have been observed in the trees and shrubs as under: 'Old-man' saltbush about three feet from the ground (9th November—young); wattle-tree, about seven feet from the ground; ironbark (eucalypt), at about forty feet; aster, with a leaf like rosemary (18th October—eggs); grey-box (eucalypt), about fifty feet high (26th October—old birds feeding young). Nests in all cases were built of moss, root fibres, grass, and spiders' cocoons. In one instance the birds were working at their nests while I was within six feet of them. The nests as built here greatly resemble that of the Yellow-faced Honeyeater (*P. chrysops*), but are thicker towards the bottom. One nest had several pieces of bark woven through the structure and over the branches to which it hung. Have only seen these nests in one part of this district (the Upper Werribee River), and only in a tract of country about half a square mile in extent."

Breeding season, July to January.

335.—PTILODIS CASSIDIX, Jardine.

HELMETED HONEYEATER.

Figure—Gould: Birds of Australia, fol., supp., pl. 39.

Reference.—Cat. Birds Brit. Mus., vol ix., p. 243.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1885); also Proc. Austrn. Assoc., vol. vii., p. 621 (1898).

Geographical Distribution.—Victoria.

Nest.—Substantial, cup-shaped, deep, with bulging sides; constructed of soft strings or strips of brownish bark (*E. obliqua*), with a few spiders' cocoons and a leaf or two inserted; inside lined with fine bark and other soft material, such as hair, clematis seeds, &c.; usually suspended in the branch of a low tree or bush near or overhanging a stream, in thick forest. Dimensions over all, $3\frac{1}{2}$ to 4 inches by 4 inches in depth; egg cavity, $2\frac{1}{4}$ inches across by $2\frac{3}{8}$ inches deep.

Eggs.—Clutch, two; oval or inclined to an ellipse in form; texture fine; surface slightly glossy; colour of a fleshy-tint, moderately marked with reddish or pinkish-brown and dull-purplish spots, more numerous about the apex. Dimensions in inches of two clutches: A (1) $\cdot95 \times \cdot69$, (2) $\cdot94 \times \cdot68$; B (1) $\cdot92 \times \cdot63$, (2) $\cdot91 \times \cdot64$. (Plate 14.)

Observations.—The Helmeted or Leadbeater Honeyeater is perhaps the rarest and the most splendid bird of its genus. It was brought to scientific light in a peculiar way. Gould's friend, Sir William Jardine, sent him a specimen obtained in Edinburgh, from among a collection of ordinary Australian species. The new bird was exhibited at a meeting of the London Zoological Society, December, 1866.

The Helmeted Honeyeater has a somewhat local habitat, confined to the great forests of Gippsland, where no doubt it takes the place of its more inland congener, the beautiful Tufted Honeyeater (*P. auricomis*), which it resembles. Like the Tufted, the Helmeted is gregarious at seasons. Mr. A. W. Milligan informed me he had seen a large flock in the vicinity of Olinda Creek, near Lilydale.

It was at the same creek that the only four authenticated nests have been discovered, the first and historical nest being found during the first camp-out of the Field Naturalists' Club of Victoria, November, 1884. I was aware these fine birds existed in a certain patch of native hazel (*Pomaderris*) scrub, where on several occasions I made attempts, but failed to discover their breeding-places. The camp-out having formed themselves into parties, I piloted the oologists to the hazel patch, which was hardly entered before the honour fell to the late Mr. W. Hatton of detecting the first nest, with the rare Honeyeater sitting. The nest was situated at a height of about twenty feet, and was suspended to an outstretched branch of a hazel overhanging the creek. With what ecstasy of delight the small tree was ascended! The handsome bird still retained possession of its nest. With Mr. Hatton's assistance, I all but had my hands on the coveted prize, when, without a moment's

warning, crash went the tree by the root, and all—the two naturalists, tree, bird, nest, and eggs—went headlong into the stream beneath. Alas! I thought, farewell to the eggs of *Ptilotis cassidix*. So near and yet so far! But imagine our astonishment when, after dragging ourselves out of the water, and removing some of the fallen débris, we find nest and eggs intact—thanks to the poor bird, that bravely stuck to its home till overwhelmed by the falling foliage. The eggs, in which incubation had just commenced, were beautiful specimens, and are now in my cabinet. Mr. Hatton and Mr. Gillespie found a second nest that day, the eggs of which were much incubated. The third nest was discovered by two field naturalists the following season, near the same locality, also in a hazel, overhanging the stream; while the fourth nest I found 9th October, 1886, by the same creek, but nearer Lilydale. By bending the bush or small tree, this nest was reached from the ground. The eggs—a pair—were perfectly fresh, and now adorn the collection at the National Museum, Melbourne.

Breeding months are most likely from September to December.

336.—PTILOTIS CRATITA, Gould.—(313)

WATTLE-CHEEKED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 38.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 243.

Previous Description of Eggs.—Campbell; Victorian Naturalist, vol. xvi., p. 111 (1899).

Geographical Distribution.—Northern Territory (?), Victoria, South and West Australia.

Nest.—Cup-shaped; fairly well built of very fine shreds of bark, felted or matted together with an abundance of spiders' webs and torn cocoons, imparting to the structure a whitish appearance externally; lined inside with fine grass and a few feathers; usually suspended by the rim, at a height varying from three feet to six feet from the ground, in creeper in mallee (*Eucalyptus*) scrub. Dimensions over all, $2\frac{3}{4}$ inches by $2\frac{3}{4}$ inches in depth; egg cavity, 2 inches across by 2 inches deep.

Eggs.—Clutch, two; in the type set one is almost elliptical in form, the other a roundish-oval; texture of shell, fine; surface glossy; colour, white, sparingly and finely-spotted with rufous or reddish-brown and faint purplish brown, the markings being more numerous about the apex. Dimensions in inches (elliptical): $\cdot 84 \times \cdot 6$,; (roundish): $\cdot 79 \times \cdot 64$. These eggs are among the lightest coloured of *Ptilotes* eggs.

Observations.—The beautiful Wattle-cheeked Honeyeater has been chiefly found in the southern parts of Australia, where it seems to love the timber of the drier country, such as mallee tracts.

This species may be distinguished from all its kind by the stripes of lovely lilac-coloured naked skin which stretch from the corner of the mouth across the sides of the cheeks; hence the vernacular name, "Wattle-cheeked." The wattle, however, in the young or immature bird is yellowish.

GoULD first found this Honeyeater as a new bird on the 26th June, 1839, in the ranges near the Upper Torrens, in South Australia. So, sixty years passed before an authenticated nest with eggs was discovered and brought to scientific light.

During a search for Mallee Hen egg mounds near Lawloit, October, 1884, I flushed a Wattle-cheeked Honeyeater in the act of constructing its nest; but I never passed that way again, and I had no further opportunity of exploring the haunts of the Honeyeater till September, 1899, when, with two companions, I was investigating some mallee scrub, locally known as Kemp's Block, at Woorak West, about ten miles to the north of the flourishing township of Nhill. Finding the interesting birds fairly numerous there, we secured three pairs of skins for museum purposes, and on the 25th I discovered a nest containing a pair of almost fresh eggs, procuring one of the parents for identification.

The nest was situated about six feet from the ground, in a parasitical creeper (*Cassytha*), entwining a mallee bush (*Eucalyptus*). I saw another nest similarly situated, but about three feet from the ground, which had been tenanted by young, but whether the current season or the last I could not say. Other two nests apparently in course of construction were found, and two old ones—one being in a stiff-leaved *Grevillea*, and one in another kind of bush.

One of the bird's calls—probably its alarm-note—is loud, and sounds something like "chuc-chuc-chuc-chuc-chuc," repeated very rapidly many times. Another noise is composed of jerky rattle-like notes. The birds are shy as well as noisy.

An egg in the collection of Mr. William White, Reed-beds, South Australia, is probably referable to this species. It was taken on Kangaroo Island early in October, 1895. There were two eggs in the nest, but one was unfortunately broken. The remaining one resembles the roundish examples above described, and measures $\cdot 76 \times \cdot 65$ inches.

337.—PTILOTIS KEARTLANDI, North.

KEARTLAND HONEYEATER.

Figure and Reference.—North: Report Horn Scientific Expedition, pl. 6.

Previous Descriptions of Eggs.—North: Report Horn Scientific Expedition, p. 94 (1896); Campbell: Proc. Austrn. Assoc., vol. vii., p. 623 (1898).

Geographical Distribution.—South (Central), West, and North-west Australia.

Nest.—Not unlike that of *P. sonora* (Singing Honeyeater).

Eggs.—Clutch, two usually; inclined to be lengthened and oval in form; texture fine; surface glossy; colour pale flesh-tint or light pinkish-buff, sparingly marked with a few indistinct reddish spots in the form of a belt round the apex. Most resemble those of *P. sonora*. Dimensions of a clutch in inches: (1) $\cdot 88 \times \cdot 6$, (2) $\cdot 85 \times \cdot 58$; an odd example: $\cdot 89 \times \cdot 68$.

Observations.—In a small parcel of skins collected by Mr. Tom Carter in the vicinity of the North-west Cape, about 1890, I received one skin of this Honeyeater, but I did not pay much attention to it at the time, taking it to be a variety of the Singing Honeyeater; but on comparison it will be observed that *keartlandi* is the smaller and more brightly coloured bird.

Mr. G. A. Kearthland found the same kind of bird in Central Australia during the Horn Scientific Exploring Expedition, 1895, and Mr. A. J. North, who was entrusted to examine all the skins collected by the expedition, recognised a specific difference in the Honeyeater and dedicated it to Mr. Kearthland, a compliment richly deserved for his enthusiasm as a field ornithologist.

In 1896 Mr. Kearthland again met his namesake in some scattered mallee near the tropical line in Western Australia during the unfortunate expedition promoted by Mr. Calvert.

338.—PTILOTTIS PENICILLATA, Gould.—(318)

WHITE-PLUMED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 43.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 244.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); North: Austn. Mus. Cat., p. 205, pl. 12, fig. 15 (1889); Campbell: Proc. Austn. Assoc., vol. vii., p. 624 (1898).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South and West (?) Australia.

Nest.—Cup-shaped, small, sides slightly swollen; constructed of grass matted with spiders' web and cottony substances, sometimes with greenish-coloured cocoons; inside lined with cottony material and long horse-hair; usually situated well out of reach, suspended to the pendulous branch of a eucalypt, not unfrequently near or overhanging water, but occasionally placed low in a melaleuca, acacia, &c. Dimensions over all, 2 to $2\frac{1}{2}$ inches by 2 to $2\frac{1}{2}$ inches in depth; egg cavity, $2\frac{1}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three; nearly true oval in form; texture fine; surface very slightly glossy; colour, delicate pinkish-white,

moderately marked with distinct roundish spots of pinkish-brown and purplish-grey. Sometimes, especially more inland, the ground-colour is pure white and the markings few and faint. Dimensions of a clutch in inches: (1) $\cdot 86 \times \cdot 59$, (2) $\cdot 84 \times \cdot 58$, (3) $\cdot 83 \times \cdot 58$.

Observations.—The principal habitat of this familiar Honeyeater may, roughly speaking, be said to be the south-east.

The bird is common in Victoria, where it appears to be one of the few native birds that thrives, or, at all events, is not driven back by the advance of civilisation; in fact its numbers have rather increased in the parks and gardens in the vicinity of Melbourne. Every school-boy about Melbourne knows what a "Greenie"—the White-plumed Honeyeater—is. It takes its name from small tufts of white silky feathers behind the ears. The upper surface is yellowish-grey, and the under surface brownish in tone.

The White-plumed Honeyeater, like all the members of its genus, is an active little creature, and a trifle pugnacious. Single-handed, it easily knocks a Sparrow on its back. Should a large bird or natural enemy appear, this Honeyeater sets up a shrill, rapid, monotonous "pee-pee-pee" alarm, which is immediately taken up by all the species in the neighbourhood. The Honeyeaters then congregate about where the intruder is perched, screech and scold it till it is fairly scared, and glad to depart.

Gould describes the nest of this species, but not the eggs, except that they are three in number. He quoted from a South Australian correspondent, who wrote: "The *Ptilotis penicillata* builds in the acacias close to my house at Collingrove, near Angaston. I can sit at dinner and watch the young ones being fed. One female sat hatching close to the window, with the strong light of a moderator lamp shining on her at night."

A nest of the White-plumed Honeyeater containing a set of beautiful fleshy-white eggs, with pronounced spots of pinkish-brown, is indeed, although common, amongst the most beautiful things in a collector's cabinet.

On the Murray I have found the eggs of the White-plumed Honeyeater almost white, and with very few markings. Still further afield, in Central Australia, Mr. G. A. Keartland, in the Report of the Horn Scientific Expedition, states he also took eggs of this species similar in character.

Only on one occasion have I found the large flesh-coloured egg of the Pallid Cuckoo (*C. pallidus*) in a nest of the White-plumed Honeyeater.

The principal breeding months are September to December. However, the extreme limits of the season may be taken as from June or July to February.

339.—PTILOTIS LEILAVALENSIS, North.
P. carteri, Campbell.

CARTER HONEYEATER.

Reference.—Rec. Austrn. Mus., vol. iii., p. 106 (1899).

Geographical Distribution.—West and North-west Australia, Northern Territory and North Queensland.

Nest and Eggs.—Undescribed.*

Observations.—Although this Honeyeater was first publicly exhibited and described as new by me at the Field Naturalists' Club of Victoria, 13th March, 1899, under the name of *P. carteri*, I have to sink my priority of title (the scientific, at all events) in favour of Mr. A. J. North's *P. leilavalensis*, which appeared in the Australian Museum "Records," 17th April, or about a fortnight previous to the publication of my description in the "Victorian Naturalist."

It is interesting to observe that the two birds described were from opposite sides of the Continent. One from the Fullarton River, about thirty miles east from Cloncurry, Queensland, was collected by Mr. A. S. Macgillivray, Leilavale Station, who states these birds are fairly common in the tea-tree along the river. The other was taken by Mr. Tom Carter, in the region of the North-west Cape.

The bird differs from *P. penicillata*, of which it appears to be a northern or western representative, by its yellow-tinted plumage—almost as yellow as *P. flavescens*.

* Since this was written, and through the exertions of Mr. Carter, I have been enabled to describe a nest and eggs of this newly-named Honeyeater, taken by him on the 14th July, 1899, at Cardabia Creek. (*Vide* "Victorian Naturalist," vol. xvi., p. 87.)

Nest.—Cup-shaped, oval, well-built, chiefly of wool and spiders' cocoons bound together with light-coloured rootlets; lined inside, principally on the bottom, with yellowish vegetable down, and suspended by the rim to a salt-bush, three or four feet from the ground, near a water-hole. Dimensions over all, 3 inches by 2½ inches in depth; egg cavity, 1¼ inches across by 1¾ inches deep.

Eggs.—Clutch, two; oval in shape; texture of shell fine; surface glossy; colour, whitish or pinkish-white, finely but distinctly spotted with reddish-brown and purplish-brown, the markings, which are moderately disposed, being as usual thickest on the larger end. Most resemble those of its near ally *P. penicillata*. Dimensions in inches:—(1) .85 × .6, (2) .83 × .6.

Observations.—Mr. Carter writes:—"At the creek I soon found a nest of my namesake. The hen came off very wildly, and after some hunting I found the nest suspended three and a-half feet from the ground, in a species of salt-bush, among dense prickly acacia scrub, on the edge of a pool. It contained two eggs. Both birds came flying about, and I shot the hen. Although there were several other pairs of birds at that pool I failed to find more nests. Next day I went further up the creek and found three more nests of the Honeyeater: the first, with two small young ones, in a salt-bush (old man), about three feet from the ground; the second in the same sort of bush, with two eggs; and on returning on the opposite side of the creek the third nest, hanging in one of the prickly acacias. This had two fresh eggs. The following day I found a fourth nest ready for eggs, in a bunch of acacia and salt-bush."

Mr. Carter further added that in one clutch the markings were blotchy and not so well defined as in those above described, which are apparently typical.

I have no doubt that the bird seen by the Calvert Expedition on the southern edge of the great North-west desert, where young and eggs were noted in July and August (1896) and recorded as *P. penicillata*, was referable to the Carter Honeyeater.

However, in its habits it very much resembles *P. penicillata*. Mr. Carter writes: "It is a very common bird on the Gascoyne River, and from that locality northward to here (Point Cloates), wherever white-gums (*Eucalypts*) are found, close to pool or well. I never saw it away from water. It has a pleasing, liquid, warbling chirrup, uttered from daylight till dark, and is very inquisitive and aggressive. It will come and peep at you when you are camped, scolding in a harsh key; and is very quick at mobbing Hawks, Owls or cats. The alarm note of one bird calls up all within earshot."

340.—PTILOTTIS ORNATA, Gould.—(314)

YELLOW-PLUMED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 39.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 244.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 515 (1865); North: Austrn. Mus. Cat., p. 204 (1889); Campbell: Proc. Austrn. Assoc., vol. vii., p. 625 (1898).

Geographical Distribution.—Victoria (probably the South-west interior of New South Wales), South and West Australia.

Nest.—Cup-shaped, neat, small; constructed lightly of fine greenish grass, matted or intermixed with spiders' cocoons and wool; no particular lining inside except a few downy seeds, &c., on the bottom; usually suspended on a parasitical climber, bush, or small tree. Dimensions over all, $2\frac{1}{2}$ inches by $1\frac{5}{8}$ inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{3}{8}$ inches deep.

Eggs.—Clutch, two to three; oval or stout oval in shape; texture fine; surface, faint trace of gloss; colour, beautiful, being rich salmon pink, distinctly blotched and spotted, particularly about the apex, with rich pinkish-brown and dull grey markings. Dimensions of a clutch in inches: (1) $\cdot 82 \times \cdot 61$, (2) $\cdot 82 \times \cdot 61$, (3) $\cdot 81 \times \cdot 6$. (Plate 14.)

The eggs, like those of the Lesser Yellow-spotted Honeyeater (*P. gracilis*) of Northern Queensland, are amongst the most richly coloured of the *Ptilotes*.

Observations.—This very elegant and attractive Honeyeater, or, as Gould well named it, the Graceful, has a fair range of habitat over the drier and more inland provinces from Victoria to Western Australia,*

* I find the birds from Western Australia are larger and lighter in colour compared with those from Victoria.

and possibly including New South Wales adjacent to the River Murray, or the Murray belts where Gould procured his types.

I first met this graceful bird in the season of 1880, among a forest of saplings near Bagshot, Bendigo, where one or two nests were found suspended in a parasitical creeper (*Cassytha*), supported by small trees—a very secure situation for a small nest. But the most beautifully situated nest I ever found of this species, and one well worthy of such a pretty bird, was in the mallee country, suspended in a low acacia bush, adorned with its golden store of “wee furry balls.”

Again, 25th November, 1889, I met this Honeyeater in Western Australia, on the coast at Woodman Point, about eight miles from Fremantle. There, in a splendid shining clump of eucalypts, the species of which I did not learn, a boy pointed out to me a nest suspended in a swaying branch. The late Mr. Roby Woods, in whose company I was, drove the buggy underneath. Standing upon the seat, I easily secured the nest, which contained one egg, while the pretty birds protested fearlessly, showing to perfection their graceful figures and lengthened yellow plumes upon their necks. I also noticed the same kind of bird flitting about the gum-trees in the town of Fremantle, where it seemed quite at home—as much so as its White-plumed compeer does in the gardens about Melbourne.

Breeding months, August or September to December.

341.—PTILOTIS PLUMULA, Gould.—(315)

YELLOW-FRONTED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 40.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 245.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 516 (1865); Diggles: Companion Gould's Handbook (1877).

Geographical Distribution.—Northern Territory, North (probably) and South Queensland, South and West Australia.

Nest.—Cup-shaped, small, elegant; formed of dried grasses, lined with soft cotton-like buds of flowers and suspended from a slender branch, frequently so close to the ground as to be reached by hand (Gould).

Eggs.—Clutch, two (and probably three); salmon colour, with a zone of a deeper tint at the larger end, and the whole freckled with minute spots of a still darker hue; ten lines (.83 inch) long by seven lines (.58 inch) broad (Gould).

Observations.—The range of the Yellow-fronted Honeyeater extends more northerly than its close ally the Yellow-plumed, both in east and west Australia. I do not recollect seeing the bird in Victoria. All the specimens collected by Gilbert were from the York district, in

Western Australia, where it inhabits the white-gum forests, breeding from October to January.

This bird differs from *P. ornata* by the absence of streaked markings on the breast, and by having a small black patch of feathers in the yellow plumes on sides of the neck.

342.—*PTILOTIS FLAVESCENS*, Gould.—(316)

YELLOW-TINTED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 41

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 245.

Geographical Distribution.—North-west Australia, Northern Territory, and North Queensland; also New Guinea.

Nest and Eggs.—Undescribed.*

Observations.—Little is known of the habits and economy of the beautiful Yellow-tinted Honeyeater, which is a denizen of northern parts.

Mr. G. A. Keartland, of the Calvert Exploration Expedition, when on the Fitzroy River, with regard to this beautiful Honeyeater, noted: "During the warm days of December and January these birds came to the water-trough in such numbers to drink and bathe as to completely line the trough. They seem to be exactly similar in habits to the *P. penicillata* (White-plumed Honeyeater), spending their time bathing, chasing each other, and seeking insects or pollen from the blossom amongst the eucalypt foliage. The sexes are alike in plumage, and can only be distinguished by dissection. They were just building their nests when we left the locality, in March."

Ptilotis germana, Ramsay, is a sub-species of the Yellow Honeyeater. Vide "Catalogue Birds, British Museum," vol. ix., p. 246.

343.—*PTILOTIS FLAVA*, Gould.—(317)

YELLOW HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 42.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 246.

Previous Descriptions of Eggs.—Campbell: Victorian Naturalist (1886); also Proc. Austr. Assoc., vol. vii., p. 628 (1898); North: Austr. Mus. Cat., App. (1890).

Geographical Distribution.—Northern Territory and North Queensland.

* I possess a pair of eggs from Cape York Peninsula, said to belong to this species, but their identification is not quite complete. They are similar to those of *P. flava*, but much smaller, and with a glossy surface. Dimensions: (1) .84 × .57, (2) .8 × .56.

Nest.—Cup-shaped, somewhat shallow; lightly constructed of shreds of bark and a little grass, matted together with yellowish-white spiders' cocoons; inside lined with light brownish-coloured bark; usually suspended in a low tree; not infrequently in orange or lemon trees in an orchard. Dimensions over all, $3\frac{1}{2}$ inches by 2 inches in depth; egg cavity, $2\frac{3}{4}$ inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, two; inclined to oval in form; texture fine; surface without gloss; colour, warm-white, marked chiefly about the apex with blotches of light-chestnut or pinkish-brown, and light purplish-brown. The same character of colouring as is generally found on eggs of the *Maluri* (Wrens). Dimensions of a clutch in inches: (1) $\cdot 91 \times \cdot 62$, (2) $\cdot 86 \times \cdot 61$. (Plate 14.)

Observations.—The beautiful Yellow-tinted Honeyeater is restricted to the coastal region of Northern Queensland, including the Gulf of Carpentaria.

As the orange and lemon trees were flowering in the orchard—a somewhat neglected one—adjoining our Cardwell camp, we had ample opportunities to observe many graceful Honeyeaters which were attracted thither by the seductive nectar of the flowers. No doubt many insects were devoured as well as honey. At times, especially during the morning, the garden was transformed into a perfect aviary by the presence of five or six kinds of Honeyeaters, flitting together about the blossom-laden trees—the little Brown, with its cheerful song, the Dusky, the Brown-backed, the Yellow-spotted, and the Yellow. Perhaps the most prominent visitor for song and activity was the lovely Yellow Honeyeater. The memory of our camp would be incomplete if not associated with the duets of loving pairs of these birds.

A nest was discovered building in one of the orange trees, but an accident befell it before it was completed. Subsequently, on the 22nd September (1885), in the Acacia Vale Nurseries (Messrs. Gulliver), Townsville, I found another nest containing a pair of eggs, also suspended in an orange tree, at a distance of about four or five feet from the ground. Further north, in the Bloomfield River district, Mr. Le Souëf noticed a nest containing young of this species in a mango tree that was heavily laden with fruit, and growing alongside the verandah of a dwelling; date October, 1896.

In the "Catalogue" of the Australian Museum we find it recorded that Mr. J. A. Boyd forwarded the nest and eggs of the Yellow Honeyeater, which he found, 10th January, 1890, in his plantation, Herbert River. The nest was mostly composed of the hair-like fibre of the cocoanut palm, and was suspended by the rim to the thin leafy twigs of a cumquat (orange) tree. Mr. Boyd also stated that all the nests he took were mostly composed of cocoanut fibre. Two nests were built in a species of *Ficus*, and were eighteen feet from the ground; another was built in a mango, about eight feet from the ground.

Breeding months, end of August or September to February.

344.—PTILOTTIS UNICOLOR, Gould.—(322)

WHITE-GAPED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv, pl. 46.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 249.

Previous Descriptions of Eggs.—Campbell: Victorian Naturalist (1886)
also Proc. Austr. Assoc., vol. vii., p. 629 (1898).

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland; also New Guinea.

Nest.—Cup-shaped; composed of strips of light brownish-coloured bark, matted with yellowish or golden cocoons of spiders; inside lined with a good ply of exceedingly fine grass, with a few fine casuarina needles on the bottom; usually suspended to a forked twig in the topmost branches of a leafy (small, or moderately-sized) tree near a stream. Dimensions over all, 3 to 4 inches by $2\frac{3}{4}$ inches in depth; egg cavity, 2 to $2\frac{1}{4}$ inches across by 2 inches deep.

Eggs.—Clutch, two; stout oval in shape; texture fine; surface, faint trace of gloss; colour, warm or delicate pinkish-white, with large blotches and spots of light-chestnut or pinkish-red and purple, the markings being fairly distributed, but more inclined to congregate round the upper quarter. Most resemble those of the Yellow Honeyeater (*P. flava*) type. Dimensions in inches of a pair: (1) $\cdot88 \times \cdot65$, (2) $\cdot86 \times \cdot64$.

Observations.—This modest-coloured Honeyeater is a denizen of the northern part of Australia. Gilbert discovered it in the Port Darwin district. The situations in which it was usually observed were those adjacent to swampy thickets, where it was seen generally in pairs, and exceedingly lively.

I have found the White-gaped Honeyeater as far south as Townsville, where I took birds, nests and eggs at Stuart Creek. The day following the discovery of the Yellow Honeyeater's nest (22nd September, 1885), I discovered this other, which was also new. The nest was suspended by the rim to a forked twig of a thickly foliaged tree, and contained two eggs perfectly fresh. Previously I had found a nest in the upper forked branches of a similar tree. This nest contained a pair of fully-fledged young, for which the parents were very solicitous, and gave me a good opportunity of identifying the species.

There are in the collection of Mr. Dudley Le Souëf a nest and eggs of this Honeyeater taken in the Port Darwin district, 6th January, 1899.

Breeding months, probably from August to February.

345.—*MELIORNIS AUSTRALASIANA*, Shaw.—(300)

CRESCENT HONEYEATER.

Figure.—Gould. Birds of Australia, fol., vol. iv., pl. 27.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 252.

Previous Descriptions of Eggs.—Campbell; Southern Science Record (1883); North: Austr. Mus. Cat., p. 195, pl. 12, fig. 17 (1889); Campbell: Proc. Austr. Assoc. vol. vii., p. 630 (1898).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia, Tasmania, and islands in Bass Strait.

Nest.—Cup-shaped, deep, with thick-built sides; composed of somewhat broad strips of (*Melaleuca*, &c.) bark, protected with a loose but goodly supply of twigs; firmly lined inside with fine grass, and on the bottom with fine reddish flowering stalks of moss; usually placed low in thick under scrub, in sword-grass or in ferns, in forest. Dimensions over all, 4 to 5 inches by 3 inches in depth; egg cavity, $1\frac{3}{4}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three; stout oval in shape; texture of shell fine; surface very slightly glossy; colour, delicate fleshy-tint, darker on the apex, which is boldly spotted and marked, usually in the form of a belt, with rich pinkish-red or reddish-chestnut, and dull purplish-brown or grey. Dimensions in inches of a clutch taken in Tasmania: (1) $.79 \times .56$, (2) $.78 \times .58$. A set taken in Victoria is smaller in size, and beautiful for delicate character and lovely markings: (1) $.75 \times .54$, (2) $.73 \times .54$, (3) $.72 \times .55$.

Observations.—This splendid little Honeyeater dwells in the depths of forests, especially where the thick undergrowth grows in moist or swampy places, or in mountain watercourses. The bird has a range from South Queensland to Tasmania.

It seems a misnomer to call the bird Tasmanian, for although it is numerous on that island it is by no means uncommon in favoured localities on the mainland. The black lunar-shaped mark down each side of the breast of the male naturally suggests "Crescent" or "Horse-shoe" as a more appropriate and at once distinctive name for this Honeyeater. The female is, however, destitute of the horse-shoe markings, a fact in favour of separating the species, as it was formerly, under the genus *Lichmera*, from the *Meliornes*, which have the sexes alike in plumage.

The first nest I found of the Crescent Honeyeater was in 1879, in dense tea-tree scrub that marked the course of Scotchman's Creek, near Oakleigh. Unfortunately it contained young. Guided by the cue for time and place, the following season (in September), almost in the exact spot, I found another nest, prettily situated a foot or two from the ground in a bunch of graceful coral fern (*Gleichenia*) that was supported by the scrub, containing a richly coloured clutch of three eggs.

Writing from Tasmania, Mr. A. E. Brent says: "We rarely come across more than three eggs to a nest of this little bird, but I on one occasion took four eggs from a nest in the head of bracken ferns at Austin's Ferry, November, 1885."

Breeding months, August to December.

346.—*MELIORNIS NOVÆ HOLLANDIÆ*, Latham.—(296)

WHITE-BEARDED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 23.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 253.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 487 (1865); North: Austn. Mus. Cat., p. 191 (1889); Campbell: Proc. Austn. Assoc., vol. vii., p. 631 (1898).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia, Tasmania, and islands in Bass Strait.

Nest.—Cup-shaped, sides somewhat thick; composed outwardly of twigs, bark, and grass; lined well inside, especially on the bottom, with particles of the brown, velvety, inner particles of banksia cones, or soft seed-vessels of certain plants (an example from the Upper Werribee is lined entirely with beautiful, soft, yellowish-white seed-casings of a particular shrub); usually placed in a small fork, or among the upright twigs of a low thick bush or in scrub. Dimensions over all, 3 to 4 inches by $2\frac{1}{2}$ to $3\frac{1}{2}$ inches in depth; egg cavity, 2 to $2\frac{1}{4}$ inches across by $1\frac{1}{4}$ to $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two to three, rarely four; oval in shape; texture of shell fine; surface slightly glossy; colour, pinkish buff, with a darker hue round the apex, where is a belt of rich reddish-chestnut spots, intermingled with a few dull-brown ones. Dimensions of a clutch in inches: (1) $\cdot 82 \times \cdot 62$, (2) $\cdot 8 \times \cdot 62$. (Plate 14.)

Observations.—The figure of this Honeyeater may be thus described: Head, black, conspicuously marked by a stripe over the eye; moustache and small tuft of feathers behind the ear, white; the rest of the upper surface dark, except a patch on the wing and the margin of the tail, which are yellow; while the under surface in general is white, striped longitudinally with black; eyes are pearly white; bill and feet, black. Dimensions in inches: total length 7, wing $3\frac{3}{8}$, tail $2\frac{3}{4}$, bill (which is finely pointed) $\frac{3}{4}$, feet $\frac{3}{8}$. Both sexes are nearly alike in plumage.

Gould's initial genus (*Meliornis*) of the numerous family of Australian Honeyeaters is peculiar to the more southern parts of the Continent. On account of their great love for banksia trees, they might have been fitly called Banksia Birds.

The species under notice, commonly called the New Holland Honey-eater, has its focus of numbers in Victoria and Tasmania, including islands in Bass Strait, the birds thinning out to South Australia on the one hand, and up to Southern Queensland on the other.

The coastal scrubs of tea-tree (*Leptospermum*), interspersed with banksias, are the delight of the familiar New Holland, where its loud, shrill, and scolding note is always heard. It regales itself on the nectar of the flowering cones, or "honey-suckles" as they were first called, of the banksias, while through half the year individuals may be found nesting in the warm and sheltered scrub.

These interesting birds may frequently be seen airing their golden-edged wings in the private gardens of Toorak, as well as in the more public domains near Melbourne. It is also pleasing to observe this attractive bird in the dry and arid mallee tracts where the scrub is intersected with belts of dwarf tea-tree (*Melaleuca*) bearing puce-coloured flowers. In such country I found two nests with a pair of eggs each during October 1884.

I well recollect the first nest of this species I chanced to find. It was situated in a thick bush near Brighton, November, 1880.

It is interesting to note the variation of materials used in nest-lining in different localities. The mallee nests were lined with rabbit fur and soft grass-seeds. Another nest from the Upper Werribee was furnished entirely with small calyxes of soft yellowish-white flowers belonging to some shrub.

I have never found more than three eggs or young in a nest of this Honeyeater, but Mr. A. E. Brent informs me he has occasionally found four to a clutch in Tasmania.

I have observed the egg of the Narrow-billed Brown Cuckoo in the White-bearded Honeyeater's nest. This Honeyeater is also a foster-parent of the Pallid Cuckoo.

The principal breeding months are from August to December or January, but individuals occasionally lay much earlier in the season, as the following dates prove: On the 24th May, 1885, my friend and sportsman, Mr. J. F. Brady, while shooting at Mordialloc, observed a nest of a White-bearded Honeyeater containing two fresh eggs; while Mr. Scott, on 1st July, 1884, saw a nest with young birds.

347.—*MELIORNIS NOVÆ HOLLANDIÆ* (sub-species) *LONGIROSTRIS*,
Gould.—(297)

LONG-BILLED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 24.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 254.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 489 (1865); North: Austn. Mus. Cat., p. 192 (1889); Campbell: Proc. Austn. Assoc., vol. vii., p. 632 (1898).

Geographical Distribution.—South and West Australia.

Nest.—Cup-shaped; somewhat rough outwardly, but thoroughly constructed of fine twigs, strips of bark, leaves, &c.; in some instances nearly all dry grass; inside of variegated appearance, lined with zamia (*Cycad*) wool and downy substance from banksia cones; sometimes soft leaves or a feather are added, in other instances silky seed-vessels or clematis down are used chiefly; usually situated low in the centre of bushes. Dimensions over all, $3\frac{3}{4}$ inches by $2\frac{3}{4}$ inches in depth; egg cavity, 2 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two usually, sometimes three; stout oval in shape; texture of shell fine; surface without gloss; colour, pale or delicate buff, spotted, and sometimes blotched with rufous or reddish-chestnut, the markings being more around the apex. Dimensions in inches of a proper pair: (1) $\cdot 82 \times \cdot 61$, (2) $\cdot 79 \times \cdot 6$.

Observations.—The Long-billed Honeyeater is the beautiful western variety of the familiar White-bearded Honeyeater. It has been found as far east as Encounter Bay (South Australia). Dr. Ramsay, in his "List of Australian Birds," assigns the bird to the New South Wales and Wide Bay district columns, and makes the bird a sub-species. No doubt the White-bearded Honeyeater and the Long-billed are very closely allied; but on seeing the respective birds at home, as I have enjoyed doing, there appear characteristic differences even in their voices, not to mention the specific distinction of the longer bill of the western bird.

In the recesses of the western forests I found many nests and eggs which agree with Gilbert's original description of those of the bird which is locally called the "Yellow Wing." The birds are numerous and frisky about the under scrub, chirping like chickens, or perhaps may be seen turning somersaults from some swaying bough after insect prey. The nests are usually placed a foot or two from the ground in a thick, low bush, such as an acacia. The birds sat closely, in many instances letting me almost place my hand upon them. Sometimes at my approach a pretty bird settling well down in its nest would anxiously watch me with its pearly-white eyes.

Breeding season July to December, the principal months being the last three.

348.—MELIORNIS SERICEA, Gould.—(298)

WHITE-CHEEKED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 25.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 254.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); North: Austn. Mus. Cat., p. 193, pl. 12, fig. 19 (1889); Campbell: Proc. Austn. Assoc., vol. vii., p. 633 (1898).

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest.—Cup-shaped; outwardly composed of fine twigs, strips of bark, and fine grasses; lined inside with nests of spiders and the soft downy substance of banksia cones; another example in the Australian Museum is almost entirely composed of strips of bark, with a lining of dried portions of flannel flower (*Actinotus*). Dimensions over all, $3\frac{1}{4}$ inches by 3 inches in depth; egg cavity, 2 inches across by $1\frac{3}{8}$ inches deep (North).

Eggs.—Clutch, two usually; somewhat pointed oval in form; texture of shell fine; surface slightly glossy; colour, pale-buff or flesh-tint, darker on the apex, which is surrounded with pinkish-red or reddish-brown spots. Dimensions in inches of a smallish clutch: (1) $\cdot78 \times \cdot55$, (2) $\cdot72 \times \cdot54$.

Observations.—This showy Honeyeater, with white checks, is an inhabitant of the eastern coastal country. The bird, Gould states, differs materially in its habits and disposition from the White-bearded Honeyeater, being less exclusively confined to the scrub, and affecting localities of a more open character. He found it tolerably abundant in the Illawarra district, particularly among the shrubs surrounding the open glades of the forest. It is also common at Botany Bay and most parts of that coast. Gould did not meet with the bird during his excursions inland, nor did he succeed in finding its nest.

The eggs of the White-cheeked Honeyeater in my collection, which I described (1883) on the authority of Dr. A. E. Cox, were taken in Sutton Forest, Illawarra.

Mr. North informs us that the nest of the White-cheeked Honeyeater is usually placed in the fork of a banksia or hakea, partly resting with the rim of the nest attached to the branches holding it in position, but it is often found in orange trees in gardens, in which case the nest is always suspended by the rim.

Breeding season June to November, and probably later.

349.—MELIORNIS MYSTACALIS, Gould.—(299)

MOUSTACHED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 26.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 255.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 492 (1865); Campbell: Proc. Austrn. Assoc., vol. vii., p. 634 (1898).

Geographical Distribution.—West Australia.

Nest.—Formed of small dried sticks, grass, and narrow strips of soft bark; usually lined with zamia wool; but in those parts of the country where that plant is not found, the soft buds of flowers or the hairy flowering parts of grasses form the lining material, and in the neigh-

bourhood of sheep-walks wool collected from the scrub; usually placed near the top of a small, weak, thinly-branched bush of about two or three feet in height, in a scrub of sapling eucalypts, &c. (Gilbert—Gould). Dimensions over all, 3 inches by 3 inches in depth; egg cavity, 2 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, two usually; oval inclined in form; texture of shell fine; surface slightly glossy; colour, pale-buff, darker on the apex, around which is a belt of fine spots of reddish-chestnut intermingled with purplish-grey ones, spots also appear here and there over the shell. Dimensions of a clutch in inches: (1) $\cdot 84 \times \cdot 6$, (2) $\cdot 78 \times \cdot 59$.

Observations.—The Moustached Honeyeater is an inhabitant of Western Australia, where, as Gould states, it beautifully represents the White-checked Honeyeater of the eastern coast.

The Moustached Honeyeater is fairly abundant in the scrubs about Perth Waters, and especially on the scrubby limestone hills in the vicinity of Fremantle. In both localities I observed the birds, which were remarkably shy compared with their Long-billed brethren of the Cape Leeuwin forests. I also discovered a nest building, but did not obtain the eggs. The nest was constructed of tea-tree (*Melaleuca*) bark, rimmed with fine dead twigs, and lined with soft portions of banksia cones (two varieties) and other soft seeds. However, eggs taken by a young local acquaintance the following season (8th October, 1890) reached me safely.

Gilbert found this species an early breeder, young birds ready to leave the nest having been seen on the 8th August. The time when I observed the nest building was towards the end of November. Therefore, we may infer that the breeding season is from the end of June or the beginning of July to December.

350.—MANORHINA MELANOPHRYS, Latham.—(357)

BELL MINER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 80.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 259.

Previous Descriptions of Eggs.—Campbell: Southern Science Record and Nests and Eggs Austr. Birds, pl. 1, fig. 357 (1883); also Proc. Austr. Assoc., vol. vii., p. 635 (1898); North: Austr. Mus. Cat., p. 231 (1889).

Geographical Distribution.—South Queensland (Highfields), New South Wales, and Victoria.

Nest.—Cup-shaped, round, neat, but somewhat frail; composed of fine twigs partially covered outwardly with fine shreds of bark and cocoons, but sometimes entirely covered with moss and cocoons, occasionally ornamented round the rim with broad soft leaves; inside



NEST OF THE BELL MINER

From a Photo by the Author

lined sparingly with rootlets and fine twigs, and on the bottom with downy seeds; usually fastened by the rim as if sewn by spiders' web to the horizontal twigs of a bush or small tree, sometimes attached to a bracken frond, in forest country. Dimensions over all, 3 to 4 inches by 2 inches in depth; egg cavity, $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, two, rarely three; long-oval or oval in form; texture fine; surface glossy; beautiful rich flesh-colour, distinctly marked and spotted, more especially on the apex, with rich chestnut or reddish-brown and dull purplish-brown. Dimensions of a clutch in inches: (1) $\cdot95 \times \cdot65$, (2) $\cdot9 \times \cdot63$. (Plate 14.)

Observations.—This Honeyeater has an æsthetic plumage of golden-green, the small naked spaces behind the dark-brown eyes are red, while the bill and feet are yellowish. Total length, 7 inches and 8 inches.

Captain Grant, when in Western Port, Victoria, 1801, wrote:—“Among the birds noticed was the Bell Bird, which has a note not unlike the tinkling of a bell, so that when a number of these birds are collected together, the noise they make is similar to that made by the bells of a team of horses.”

“Softer than slumber, and sweeter than singing,
The notes of the bell-birds are running and ringing.”

KENDALL.

Some romance and sentiment have been attached to the Bell Bird. It has not the sprightly appearance of the *Oreoica*—the Bell Bird of the drier provinces of the interior.

Bell Miner is a good vernacular name, because the bird is closely connected with the *Myzanthæ*; moreover, the name serves to distinguish it from the other Bell Bird. Yet the Bell Miner is lively enough in its actions, and is for ever examining in a most inquisitive manner and picking at the green gum foliage in search of food. A querist writes:—“The great curiosity of the Bell Bird to my idea is ‘What does it feed upon?’ It picks continuously at the back of the gum leaves in the same trees from year to year, and although I have crept to within a few yards of them when feeding on the apple and yellow-box scrub, and plucked the leaves afterwards and examined them, I could discover nothing. Perhaps it sucks a saccharine matter off the leaves, like the Blue-bellied Lorikeet and the King Parrot do off the stringy-barks at certain seasons of the year. I should like someone who has studied the birds to kindly answer this.”

The Bell Miner is very local, is gregarious to an extent, living in companies in certain restricted areas chiefly near water or humid swampy tracts in South Queensland, New South Wales, and Victoria.

In the early days of the State of Victoria, Bell Birds used to exist in the tea-tree (*Melaleuca*) tracts in the neighbourhood of Mordialloc and in the timber along the course of the Werribee River and on the Yarra above Hawthorn. The birds were never destroyed, yet they have mysteriously disappeared—probably removed to other forest

retreats—notably to Gippsland, where from trees and scrub in certain favoured localities in summer or winter, in wet weather or dry, from sunrise to sunset, may be heard the incessant tinkling voices of scores of birds. In no place I have ever visited are the Bell Birds more numerous than along the wooded slopes and dark gullies on the northern shores of Lake King.

On the subject of the departure of Bell Birds, Mr. Isaac Batey, of Sunbury, writing to "The Australasian," states:—"As regards birds that have left here one was the Bell Bird with its clear, metallic, ringing notes. This delightful little bird was very numerous on all the creeks years ago, and gradually dwindled away till there were only six of them left down the river, nine miles from our house. This was in 1854, when those 'Last of the Mohicans' one day came flying up stream, and we boys remarked, 'It is good-bye to the Bell Birds,' a supposition that proved quite correct, as I have not seen a single one of them since on the whole length of Jackson's Creek." Mr. Batey was inclined to the belief that the coming of the Butcher Bird, which he said arrived from a westerly point about 1850, and was unknown in the district before, had something to do with the clearance of the Bell Birds.

We are aware that if the breeding grounds of birds are interfered with the birds will desert the place. This is, I fancy, the case with the Bell Birds. They breed near the ground in low scrub and saplings underneath their particular food-trees. Therefore, when the country became stocked, cattle roamed and camped in these sequestered avenues, and so being disturbed, the delightful birds departed.

At Metung, on Lake King, I was encamped for ten days or a fortnight, when the majority of the Bell Birds appeared, to have nested very early. In the middle of October, 1881, I found all the season's birds fully-fledged and flying with their respective parents. I could not find a single nest containing eggs, although I found a great number of old nests, sometimes two or more in a bush. Any site seemed to be chosen for the nest, from scrub and bushes twelve feet high down to the common bracken fern. Some of the nests were the crudest and simplest of all Honeyeaters I am acquainted with, being constructed of just sufficient materials to ensure the safety of the eggs, and suspended by the rim to any convenient twig. The nests are sometimes patched and interwoven with portions of moss and lichen.

The same season, Mr. R. A. Poole, who lived in the locality, secured for me several clutches of the second broods, also some of the early ones the following season, which were originally described before the Field Naturalists' Club of Victoria.

From some interesting observations on the Bell Bird sent to "The Australasian," February, 1894, by a correspondent ("A.J.B.") at Metung, I extract the following:—"They make their nests usually in the fronds of the bracken fern, or in the low dogwood scrub, making little attempt at concealment. I think the Bell Birds must lose a lot of their eggs and young ones through snakes, as I have seen dozens of empty nests tilted over on the one side as though the snake had sup-

ported itself whilst helping itself to a delicate mouthful. During nesting-time the birds are bolder than ever, and will not hesitate to attack a dog if he ventures too near the youngsters. Several times when forcing my way through the scrub on hands and knees to try and see the Lyre Bird dancing on the mound, I have been defeated by getting too near their nests, as they at once set up their call, and in a few minutes dozens of them were flying round me, which was so good a hint to the Lyre Bird that it at once stopped its mimicking or whistling and made itself scarce."

Riding along the Murray frontage, near the Moira Lake, early (at sunrise) one April morning, I was agreeably surprised to hear from the living lines of gums that protected the river the voices of numerous Bell Birds. I hardly expected to find these birds so far inland, and I drew rein to listen to the chiming of the "ting-ting" notes that were piercing the crisp air of that delightful morn.

Then away in the sub-tropical parts of New South Wales, near the Tweed River, I have another pleasant reminiscence of Bell Birds. I recollect hearing their voices floating through a splendid forest of ironbarks (*Eucalyptus*) and pines, where tree-orchids with clusters of yellowish flowers beamed from the trees as we passed in the coach, while the ground scrub around was rendered attractive by the presence of the stately figures of fern-trees, palms, and cycads.

The Darling Downs (Queensland), is probably the most northerly habitat of the birds. Here I must give Mr. Hermann Lau's own description, taken from his MS. :—

"Bell Bird.—The outskirts of the so-called cedar scrubs have often favoured water tracts emerging either from the thickets or are kept in rocky enclosures. Here is where these interesting birds gather in numbers, sending forth their short, varied, bell-like notes, which tell the stray and thirsty wanderer that water is near. . . . In clumps and circles of prickly shrub belonging to the solanaceous family, adapted much by the lichens, the Bell Bird resorts for nidification. Often have I found three nests in one little bush, advantage being taken of the lichens—the only material used for building purposes, except the lining, which is taken from a fibrous tree. The eggs are two, rarely three.—Highfields, twenty-two miles north of Toowoomba, October, 1875."

There is, of course, a focus to the breeding season of the Bell Bird, probably August or September, but like many other Honeyeaters, some breed early, others late. Some years ago Dr. D'Ombraïn took a Bell Bird's nest after Easter, while a relation of Dr. Snowball took a pair of eggs the first week of May (? April), 1896, at Drouin, and shot the parent bird for his collection. The same season, in another part of Gippsland, a correspondent of Mr. C. French, jun., noticed young birds at the end of June.

On the other hand, Mr. George H. Morton, who was enjoying his summer vacation at Gippsland Lakes, reported he had found a nest of the Bell Bird containing eggs, New Year's Day, 1889. Therefore, between these two extremes may be taken as its breeding season.

351.—MYZANTHA (MANORHINA) GARRULA, Latham.—(353)

MINER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 76.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 260.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 575 (1865); North: Austr. Mus. Cat., p. 229, pl. 12, fig. 2 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 639 (1898).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia and Tasmania.

Nest.—Cup-shaped, constructed of fine twigs and grasses or dead flowering stalks of plants (herbs), or sometimes chiefly rootlets, occasionally ornamented with spiders' cocoons; lined inside with a ply of very fine grass, bark, or white cottony substances; sometimes hair, wool, &c., are added; usually situated amongst the thin forked branchlets of a low tree, sapling or bush. Dimensions over all, 6 to 7 inches by 4 inches deep; egg cavity, $3\frac{1}{2}$ inches across by $2\frac{1}{2}$ inches deep. (See illustration.)

Eggs.—Clutch, three to four, rarely five; oval or round oval in form; texture fine; surface glossy; colour, warm-white, mottled and spotted all over, more thickly on the apex, with rich reddish-chestnut and purplish-grey. Dimensions in inches of a pair taken in Tasmania: (1) $1.1 \times .79$, (2) $1.1 \times .78$; of a full clutch from the mainland: (1) $1.04 \times .78$, (2) $1.04 \times .76$, (3) $1.03 \times .78$, (4) $1.02 \times .77$. (Plate 14.)

Observations.—The familiar Miner, or, as it is called in some parts, the Soldier Bird, is one of the most common of our Honeyeaters. The bird is about ten inches long, and wears a greyish-brown dress, lighter in colour on the underneath parts, and with an agreeable yellowish tinge on the wings. There is some black about the back of the head, a naked space beneath the eyes (which are hazel) while bill and feet are yellow. The flight is peculiar. When the bird is flying the wings move very rapidly; all the while the bird appears struggling and making very slow progress. They were first called Miners in Tasmania*; why I know not. Wherever you meet the birds, whether near the coastal scrub, in belts of timber along the river, on a plain, or in the mallee, by their scolding voices they at once make their presence known, and yours too, should you happen to be stalking upon rarer game. However common and annoying the birds may be, the shapely-built nest and reddish-coloured eggs are both very beautiful.

Two eggs I took from a nest near that grand natural sight—Corra Linn, Tasmania—were slightly larger than those generally taken in Victoria. This agrees with Gould's observations that the Miner in

* The reason why these birds were first called Miners appears to have been lost in obscurity. However, I have elected to call all the *Myzantha* Miners instead of Minahs which are totally different birds.



NEST OF THE NOISY MINER

From a Photo by D. Le Souef

Tasmania is a more robust bird and larger in every respect than the same species found on the mainland.

General breeding months are from July or August to January; but it has been noticed in Queensland when some of the birds built early, in July or August, only one or a pair of eggs are laid, as against a clutch of three or four laid when the season is more advanced and there is a great supply of food. Young Miners have been seen in the nest on the Paroo, New South Wales, as late as April; again in March (1898), a nest containing three eggs was noticed.

Mr. Lau discovered at Warroo (Queensland), a "poor soldier" hanging dead, having been strangled with a long horse-hair, which the bird had been evidently conveying to its nest.

This Miner's nest is sometimes a receptacle for the smaller, flesh-coloured egg of the Pallid Cuckoo (*Cuculus pallidus*). I have never been fortunate enough myself to discover the strange egg in the Miner's nest, but have seen several examples that were taken from such receptacles in the Ararat district.

The young of the garrulous Miner assume the adult colouring from the nest. In 1891, Mr. C. F. Belcher found a Miner's nest near the ground, built in long grass and bracken—a somewhat unusual site.

352.—MYZANTHA (MANORHINA) OBSCURA, Gould.—(354)

DUSTY MINER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 77.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 260.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 577 (1865); Campbell: Proc. Austr. Assoc., vol. vii., p. 640 (1898).

Geographical Distribution.—South and West Australia.

Nest.—Cup-shaped; composed chiefly of dead twigs, lined inside with soft grasses, feathers, &c., and usually situated amongst the topmost forked branchlets of small trees or saplings.

Eggs.—Clutch, three to four; oval inclined in form; texture fine; surface slightly glossy; colour rich salmon or rich reddish-buff, obscurely marked with rich reddish-brown or chestnut and dull purplish-brown, forming a patch round the apex; resemble those of *M. flavigula*, both being altogether different from the well-known eggs of *M. garrula*. Dimensions in inches: (1) 1.5 × .75, (2) 1.04 × .77. (Plate 14.)

Another pair taken at Broomhill, November, 1889, are somewhat round, exceedingly rich in colouring—one example, contrary to the rule, being darkest on the smaller end: (1) .94 × .74, (2) .92 × .74.

Observations.—I found this bird just as clamorous in the great western territory as the common species is in the eastern parts. The voices are almost identical in the two species, likewise the unmistakable struggling flight and rapid motion of the wings when the bird is flying from tree to tree.

353.—MYZANTHA (MANORHINA) FLAVIGULA, Gould.—(356)

YELLOW-THROATED MINER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 79.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 261.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 52 (1882); Campbell: Southern Science Record (1883), also Proc. Austr. Assoc., vol. vii., p. 641 (1898); North: Austr. Mus. Cat., pl. 12, fig. 4 (1889).

Geographical Distribution.—Australia in general.

Nest.—Cup-shaped; somewhat more compactly constructed than that of the more familiar Miner (*M. garrula*), and like the other species sometimes ornamented with spiders' cocoons; inside well-lined with soft, fibrous material, in some instances wool. Inside dimensions, according to Dr. Ramsay, are 3 inches by $2\frac{1}{4}$ inches deep.

Eggs.—Clutch, three to four, occasionally five; oval or elliptically inclined; texture fine; surface slightly glossy; colour, rich salmon or rich reddish-buff, minutely and obscurely spotted with reddish and purplish-brown, especially at the larger end. Dimensions in inches of odd examples: (1) $1.02 \times .77$, (2) $1.0 \times .72$.

Observations.—This smaller species may be said to be the great interior representative of the *Myzanthæ*. But outlying or isolated families of the Yellow-throated Miner are found in such localities as Darling Downs, Riverina, and the Lower Murray district. It has not the exceedingly noisy disposition of its larger cousins.

Mr. Lau observed on the Darling Downs that the Yellow-throated Miner built higher than the common variety usually did, while Dr. Ramsay says in New South Wales the bird builds in trees and shrubs, frequently near the ground.

During the exploration of the North-west by the unfortunate Calvert party, Yellow-throated Miners were frequently seen, and several shot between Lake Way and Separation Well. Isolated pairs were also noted in the sandhills of the desert until nearing the Fitzroy River. The late Mr. G. L. Jones, the youthful explorer—the first of the two lost ones to succumb to the burning desert—took a clutch of three eggs of this Miner during August (1896) a short distance north of Lake Augusta.

354.—MYZANTHA (MANORHINA) LUTEA, Gould.—(355)

YELLOW MINER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 78.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 262.

Geographical Distribution.—North-west Australia and Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—Gould considers this to be the finest species of the genus, exceeding as it does every other, both in size and in the brilliancy of its colouring. Absolutely nothing is known of its natural economy.

355.—ACANTHOCHELA CARUNCULATA, Latham.—(331)

RED WATTLE BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 55.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 263.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 539 (1865); North: Austr. Mus. Cat., p. 215, pl. 12, fig. 5 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 642 (1898).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South and West Australia.

Nest.—Open, occasionally somewhat flat; composed of twigs and strips of bark matted together, in Western Australia, but in the east composed of twigs; lined with grasses or soft bark, wool, and a few feathers. Dimensions over all, 6 to 7 inches; egg cavity, $3\frac{1}{2}$ inches across by 2 inches deep. Variously situated, from a low, open bush up to closely-set branchlets, or mistletoe clump of a tall tree.

Eggs.—Clutch, two to three; oval or short oval in shape; texture fine; surface slightly glossy; colour, pinkish-buff or salmon-tint, blotched and spotted, especially around the apex, with rich reddish-brown, and dull purplish-grey. Dimensions of clutches in inches, eastern examples: (1) $1.26 \times .9$, (2) $1.25 \times .92$; examples from Western Australia are usually rounder in form, ground-colour a lighter pinkish tone, and are smaller in size: (1) $1.16 \times .87$, (2) $1.15 \times .86$. (Plate 14.)

Observations.—The restless and shy Wattle Bird, with a curious call, hard to describe in words, but sounding something like "up with the

rag," is found chiefly in the coastal regions, from South Queensland round to Western Australia, and is regarded as a common species. The Wattle Bird is between 14 inches and 15 inches in length, and is greyish-striped in colour, with the centre of the abdomen more or less yellow. The eyes are reddish, and the wattle or lobes blood-red. These lobes—one on either side of the face—are pendulous, and give rise to the vernacular name of Wattle Bird. The birds are good eaters—ten averaged $4\frac{1}{2}$ ounces in weight. My first experience of the bird was many years ago, when I took its lovely, salmon-pink eggs in Albert Park, near Melbourne. I have since taken their nests in such places as mistletoe on gum-trees in the Brighton and Oakleigh districts, in the open, prickly bursaria bushes, in the mallee, as well as in bushy trees in Western Australia.

In Mr. Lau's Queensland (South) note he says:—"I have seen the Wattle, or Gill Bird, near the Pacific, where honeysuckles, banksia, or sandy ground abound; nevertheless, as such trees are often abundantly to be seen towards the interior, this bird has found them out, and there is where I have met with nests, which were situated mostly on the top of a slender sapling. Nests formed of dry sticks, and rootlets inside; eggs, two to three, mostly the latter number." My own experience in the south is that the eggs are usually a pair, although I possess records of having taken two nests with each three eggs. I was able to verify Gilbert's acute observation, that the nests of the Wattle Bird in Western Australia are usually built without lining.

In the years 1853-60, I am told, Wattle Birds were very plentiful at Frenchman's, Amphitheatre, Warrnambool, and other places in the western district of Victoria, where seventy birds might be easily shot in a morning.

Mr. J. Sommers, Cheltenham, reported that he had found the single egg of the Pallid Cuckoo in a Wattle Bird's nest, 28th September, 1895.

The following "snake yarn" is a clipping from a Melbourne newspaper:—"Some years ago, while in Pyalong, my attention was attracted by the noise and fluttering of a Wattle Bird. I was surprised to see a snake up a wattle-tree, in the act of swallowing a fully-feathered bird. His body was balanced on the limbs near the nest, which was twelve feet or thirteen feet from the ground. The bird was slimed all over, and with great effort the snake was trying to gulp it down head first. I watched the process for some time, and then despatched the snake. The bird was dead. Near the log close by were some feathers (same sort), so I guess the reptile swallowed two birds. The snake was about four feet long; it had a thick neck, and was dark in colour."

The breeding months include August to December, but principally September and October.

356.—*ACANTHOCLERA INAURIS*, Gould.—(330)

YELLOW WATTLE BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 54.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 263.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. 1., p. 537 (1865); North: Austr. Mus. Cat., p. 214 (1889); Campbell: Proc. Austr. Soc., vol. vii., p. 643 (1898).

Geographical Distribution.—Tasmania and King Island.

Nest.—Open, flat; composed of moderately-sized twigs and grasses; lined with wool or other soft material; usually situated in a low thick tree. Dimensions over all vary from 7 to 10 inches; depth about 3 inches.

Eggs.—Clutch, two to three; lengthened in form; texture, fine; surface glossy; colour, pinkish-buff or salmon-tint, moderately but boldly marked with blotches and spots of reddish-brown or chestnut and dull purplish-grey, the majority of the markings being on or about the apex. Dimensions in inches of odd examples: (1) 1.52 × .98, (2) 1.4 × .9.

Observations.—Though we made three excursions to the different groups of islands in Bass Strait, I noticed this fine large Honeyeater on King Island only; therefore, excepting that island, we may infer that the larger Wattle Bird is found nowhere out of Tasmania. There is just a possibility that we may have missed it on Flinders—a large and scrubby island. The Tasmanian Wattle Bird is 18 inches in length, and wears long (over an inch) yellowish wattles instead of the red of the mainland bird. They weigh 5½ or 6 ounces each and are excellent eating.

This Wattle Bird has a remarkable voice, which has been compared to that of a Blue-bellied Lorriquet with a cold in its throat.

Breeding months August to December.

357.—*ACANTHOCLERA MELLIVORA*, Latham.—(332)

BRUSH WATTLE BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 56.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 264.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 542 (1865); North: Austr. Mus. Cat., p. 216, pl. 12, fig. 6 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 644 (1898).

Geographical Distribution.—North (?) and South Queensland, New South Wales, Victoria, South Australia, and Tasmania.

Nest.—Somewhat small, flat, in instances fairly built; composed of fine dead twigs, &c., occasionally a few spiders' cocoons are added; centre lined with small quantity of soft brownish strings of bark or other fibrous material; generally built in a closely-forked branch of bush or tree. Dimensions over all of a well-built nest, 4 to 5 inches by $2\frac{3}{4}$ to 4 inches in depth; egg cavity, 3 inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, one to two, rarely three; a long ellipse in form; sometimes oval; texture fine; surface slightly glossy; colour, pinkish-buff or salmon-tint, moderately blotched and spotted with reddish-brown or chestnut and dull purplish-grey, the markings being more numerous about the apex. Dimensions in inches of single examples: (1) $1.16 \times .74$, (2) $1.12 \times .73$.

A pair from Tasmania is much darker and richer in the ground-colour, and with markings larger and bolder: (1) $1.1 \times .78$, (2) $1.07 \times .78$.

Observations.—The Brush Wattle Bird is nearly related to the Wattle Bird proper, which it resembles in colour, but it is smaller in size, and lacks the wattles on the face. The length of a specimen is between 11 inches and 12 inches. In matured birds, the general greyish and dark-brown plumage is beautifully and conspicuously spotted with white, while underneath the wings is reddish-brown.

All round the eastern coast, and in some portions of Tasmania, wherever the banksias flourish, the harsh, guttural notes of the Brush Wattle will be heard. In such places as the shores of Lake King, Gippsland, and the park-like land near Ararat, Victoria, I have seen these birds numerous. It was in the gullies running into the foot-hills of the Pyrenees that I secured the examples of eggs in my collection.

Gould mentions that two of the Brush Wattle Bird's nests and eggs forming part of his great collection, were taken from the shrubs growing near the Botanical Gardens, Sydney, where these birds in those days were plentiful.

Breeding months August or September to December.

358.—ACANTHOCHERA LUNULATA, Gould.—(333)

LITTLE WATTLE BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 57.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 265.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. 1., p. 544 (1865); Campbell: Proc. Austrn. Assoc., vol. vii., p. 645 (1868).

Geographical Distribution.—West Australia.

Nest.—Slightly concave, and lightly constructed; composed of very fine twigs; centre lined with shreds of soft reddish-coloured bark,

portions of grass, and one or two spiders' greenish-coloured cocoons. Dimensions over all, about 4 inches by $1\frac{1}{2}$ inches in thickest part.

Eggs.—Clutch, one usually; long oval or elliptically inclined; texture fine; surface slightly glossy; colour, rich or dark pinkish-buff or salmon-tint, marked and spotted, more numerous around the apex, with rich reddish-brown and dull purplish-grey. Dimensions in inches of single examples: (1) $1.18 \times .8$, (2) $1.17 \times .79$. (Plate 15.)

Observations.—My first field-outing in Western Australia was to Middleton Harbour, part of King George's Sound. The locality was simply a repetition of some parts of the shores of Port Phillip—slightly undulating sandy ridges sustaining banksias, acacias, &c., between the beach and tea-tree (*Melaleuca*) swamps at the back—but the species of vegetation was changed, likewise some of the birds, amongst which was the Lunulated Wattle Bird. It was the last day of September, 1889, and I found three nests in different stages—one building, one containing a beautiful egg, and the bird occupied with a young one. All the nests were situated in thick, silky, or velvet bushes (*Adenanthos*). The week following, in the same locality, I took another nest with a fresh egg. Then on the west coast, towards the end of November, I obtained two more nests, each containing a single egg—one in the Karridale forest and the other at Coogee, near Fremantle. Incubation had commenced in both these instances.

The singular circumstances mentioned by Gilbert that the Little Wattle Bird laid but one egg was proved in the five nests I found.

359.—*ACANTHOGENYS RUFIGULARIS*, Gould.—(329)

SPINY-CHEEKED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 53.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 265.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 535 (1865); North: Austr. Mus. Cat., p. 213, pl. 12, fig. 10 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 646 (1898).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South, West, and North-west Australia.

Nest.—Cup-shaped, strong, but thin, so thin that in some instances the contents may be seen from beneath; composed of long, round pieces of greenish grass, interwoven or matted with spiders' web, some with the addition of a few cocoons; scantily lined on the inside bottom with wool and such like material; in some instances there is no particular lining; usually suspended by the rim in a bush—acacia, &c.—or swaying branch of casuarina or other low tree, in open forest,

Dimensions over all, 4 to 5 inches by $2\frac{1}{2}$ inches in depth; egg cavity, $2\frac{3}{4}$ to 3 inches across by $1\frac{3}{4}$ to 2 inches deep.

Eggs.—Clutch, two to three; inclined to oval in form; texture fine; surface glossy; colour, light olive, moderately marked, but more thickly about the apex, with number and dull-grey spots. Dimensions of a clutch in inches: (1) $1\cdot06 \times \cdot76$, (2) $1\cdot01 \times \cdot74$; another pair: (1) $1\cdot06 \times \cdot72$, (2) $1\cdot05 \times \cdot72$. (Plate 15.)

These eggs are quite an exception to the usual character of colouring for Honeyeaters', and more resemble types of the Yellow-breasted Thickheads' (*Pachycephalæ*).

Observations.—The Spiny-cheeked Honeyeater is a greyish mottled bird, with throat and chest pale-rufous. There are curious white hairs or spines on the cheeks, hence the name of Spiny-cheek; eyes beautiful and bluish; bill flesh-coloured, with a dark tip.

Probably no Australian Honeyeater is more interesting and pleasing than the elegant Spiny-cheeked. (By the way, Gould does not mention that frequently some of the spines on the cheek are yellowish and not always wholly white.) Its geographical range extends from Southern Queensland down south and across to Western Australia. It may be regarded as an inland species, but in winter it moves towards the sea-board, and is a visitor to the parks, cemeteries, &c., around Melbourne, Geelong, &c., where its peculiar gurgling call may be frequently heard.

The earliest I have heard the Spiny-cheeked Honeyeater about Melbourne (exact locality, Armadale), has been the 22nd May, the latest I have heard them being the 1st September, in the Botanical Gardens. About September these birds commence to return inland to their breeding haunts, which in some instances are not far away.

In October, 1882, I found two nests in the mallee, near Nhill, Victoria. One was in an acacia bush within reach. It was then building, the first egg being laid on the 20th, the second three days afterwards, when the nest was taken. The other nest was at a height of about ten feet in an erect bull-oak (*Casuarina*). It was also building. The first egg was deposited on the 18th, then an egg on each of the two following days. Full clutch, three.

Nearer home, on the Upper Werribee, November, 1890, with the Messrs. Brittlebank, I found two more Spinys' nests, as we called them. One was most charmingly situated in a wreath of feathery seeding clematis that adorned a bushy acacia (see illustration), the other being situated in a shapely native cherry tree (*Exocarpus*). Dates, 8th and 11th respectively.

The Messrs. Brittlebank have found the nests of the Spiny-cheeked Honeyeater in the following trees and shrubs, namely: bursaria, leptospermum, dodonæa, casuarina, exocarpus, and in another tree that grows by the river bank which they forgot the botanical name of; also in clematis and loranthus.

Breeding months end of September or beginning of October to December.



SPINEY-CHEEKED HONEY-EATER'S NEST, IN SEEDING CLEMATIS

From a Photo by the Author.



In the British Museum Catalogue the Spiny-checked Honeyeater is placed in the same genus as the Wattle Birds (*Acanthochaera*). Gould, although somewhat dubious on the point, placed it in a distinct genus. Oologically speaking, he was correct in doing so.

My correspondent, Mr. Tom Carter, brought under my notice a Spiny-checked Honeyeater which he obtained near the North-west Cape. It differs from *Acanthogenys ruficularis* in its smaller size, lighter or more yellowish tinge of the plumage, and by the yellow spines on the cheeks instead of white. This variety I have provisionally named *A. flavacanthus*, or Yellow-spined Honeyeater.*

Comparative dimensions in inches of the eastern and western birds: *A. ruficularis*, length $10\frac{1}{2}$, wing 4.75, tail $4\frac{1}{2}$, bill .75, tarsus 1.0; *A. flavacanthus*, length $9\frac{1}{4}$, wing 4.0, tail 4, bill .7, tarsus .9.

360.—*ENTOMYZA CYANOTIS*, Latham.—(346)

BLUE-FACED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 68.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 268.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 562 (1865); North: Austr. Mus. Cat., p. 223, pl. 12, fig. 1 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 647 (1898).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Cup-shaped, round, neat; composed of strips of bark, in some instances with grass; usually placed in a depression on the top or side of the deserted large-domed stick nest of the Babbler or *Pomatorhinus temporalis*. In some instances the nest is suspended in the ordinary Honeyeater-like fashion in the branchlets of a tree, and is substantially constructed of coarse strips of bark; lined inside with fine, reddish-brown (inner) bark, and a small quantity of grass. Dimensions over all of the latter kind of nest, about 6 inches by 4 inches in depth; egg cavity, about $3\frac{3}{4}$ inches across by 2 inches deep.

Eggs.—Clutch, two, rarely three; oval or round oval in form; texture fine; surface slightly glossy; colour, pinkish-buff or delicate salmon-tint, boldly blotched and spotted about the apex with rich chestnut-brown and dull-purple. Exactly resemble those of the Wattle Bird (*Acanthochaera carunculata*), with the exception that the markings

* Victorian Naturalist, vol. xvi., p. 3 (1899). Mr. Carter has since kindly forwarded an adult skin with white spines on the cheek. Even supposing the yellow spines on the former specimen denote immaturity, I think there still remain differences which separate the western from the eastern race of these birds.

are usually less numerous and more confined to the larger end. Dimensions in inches of clutches: Taken in Victoria: (1) 1.32 × .9, (2) 1.23 × .9; taken in Riverina: (1) 1.29 × .86, (2) 1.24 × .85. (Plate 15.)

Observations.—This splendid species is probably the largest of our Honeyeaters, being about the size of the Friar Bird. It wears a handsome coat of golden-olive, while the underneath parts are white. The head is black, set off with naked skin of a beautiful bluish or greenish hue on the face, around the yellowish-white eyes.

This big Honeyeater enjoys a goodly range, chiefly throughout the eastern half of Australia, and especially along the rivers of the interior.

It may be considered an inland species, and in Victoria it does not pass the Dividing Range—the southern limit of its habitat.

Gould, who says this attractive and beautiful Honeyeater is one of the finest of our indigenous *Meliphagidæ*, gives us a refreshing mental picture when he writes:—"I have frequently seen eight or ten of these bold and spirited birds on a single tree, displaying the most easy and elegant movements, clinging and hanging in every variety of position, frequently at the extreme ends of the small, thickly-flowered branches, bending them down with their own weight. They may be easily distinguished from other birds with which they are frequently in company by their superior size, the brilliancy of their blue face, and the contrasted colours of their plumage."

I had an opportunity of proving the curious fact mentioned by Gould of the Blue-faced Honeyeater depositing its eggs in the deserted nest of the Babbler (*Pomatorhinus*). In the beginning of September, 1881, in the Bendigo district, I was wending my way along a track through timber—in fact, I had lost my road—when I observed a splendid Blue-face in a small tree. There was also an old *Pomatorhinus* nest in the tree. I recollected Gould's remarks, and ascended to prospect. In the crown of the large stick nest I found embedded a round, open, bark-made nest, containing a large and lovely pair of the Honeyeater's eggs.

Gould further remarks "that in places where no substitute is to be found, the Blue-face makes a nest like other species of its tribe."

On the 16th October, 1885, when at Coomoooolaroo, Queensland, with Mr. Harry Barnard, I had an opportunity of observing a nest suspended in a eucalypt, which was owned, and apparently built by the Blue-faced Honeyeater, and from which we took a specimen of that bird's eggs. The nest resembled that of an Oriole, or Friar Bird, only was not so heavily constructed.

Mr. Harry Barnard's experience is that "In nine cases out of ten the *Entomyza* breeds in another bird's nest, mostly in old nests of *Pomatorhini*; but the entrance is always enlarged, and the *Entomyza* builds its own nest inside, lining it with stems of dry grass, like the inside of a Friar Bird's nest.

"When the *Entomyza* builds its own nest independently, it very closely resembles that of the Friar Bird; but is more loosely con-



BLUE-FACED HONEY-EATER'S NEST IN BABBLER'S NEST

From a Photo by D. Le Souef.



structed. A pair once built close to our cow-shed, and obtained the material for it about the house. We had a quantity of rails (lance-wood or bastard brigalow) about, which had the outside bark taken off. The birds pulled off the inner bark in strips for their nest."

Mr. Thomas R. McDougall, Claremont (Queensland), writes:—"I have seen them (*Entomyza*) breeding in the deserted nest of the Leather Head; have also seen them build a nest similar to that of the Leather Head (Friar Bird)." A youthful correspondent, Mr. Ernest D. Barnard, writes that during the season of 1898 he was fortunate in finding a double clutch (six eggs) of the *Entomyza* in one nest.

During a delightful excursion to the Lower Murray, beginning of November, 1892, Mr. J. Gabriel and I found a Blue-faced Honeyeater's nest in the topmost branches of a small red-gum by the river. Our host, Mr. G. H. Morton, climbed the tree for the pair of eggs. After a consultation we three agreed that the nest had evidently been constructed by the bird itself. Mr. Morton, 3rd December, following year, took another nest, apparently made by the *Entomyza*. Clutch, two eggs.

Mr. A. J. North, although he has not recorded having taken a nest of the *Entomyza*, says:—"I have never heard of this bird constructing a nest itself, but relines the deserted tenements of *Myzantha garrula* (Miner), *Acanthochara carunculata* (Wattle Bird), or a depression in the top of the dome-shaped nest of *Pomatorhinus temporalis* (Babbler)." It is also said to use a Magpie Lark's (*Grallina*) old nest.

Here is the story of an acute field observer, my venerable friend, Mr. Hermann Lau, respecting the Blue-faced Honeyeater, from the Dowling Downs (Queensland):—"It is one of our most handsome forest birds, and lively by nature. When other birds—The Soldier (Miner), Leather Head, &c.—are building, this nest-robber either goes out foraging the material *to make its own nest*, gathering it from its neighbours, or puts itself in possession of their whole edifice—that is, supposing the neighbour is a weaker bird, and before the latter deposits its eggs. Once I witnessed a sight never to be forgotten. A Butcher Bird when returning with building stuff found an *Entomyza* deftly pulling away at its (the Butcher Bird's) property. The Butcher Bird drove off the other and kept it at bay, when to its horror the mate of the *Entomyza* arrived to help at the thievish work. Evidently a thought struck the Butcher Bird, so that it placed itself in the middle of the nest, which enabled that bird with its formidable beak to put both enemies to flight. Such is the habit of the *Entomyza*, the sequel being that its nest is like that of a Miner (*Myzantha*), in which two to three eggs are placed, and is hung fairly high. Two broods. September, 1874."

Breeding months July or August to January, and sometimes, Mr. North states, as late as February.

For an example of a Nest within a Nest, see illustration, "Blue-faced Honeyeater's Nest in Babbler's old Nest."

361.—*ENTOMYZA ALBIPENNIS*, Gould.—(346A)

WHITE-QUILLED HONEYEATER.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 69.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 269.

Geographical Distribution.—Northern Territory and North Queensland.

Nest and Eggs.—See Appendix.

Observations.—The white at the basal of portions of the quills of the wings at once serves to distinguish this fine bird from its southern ally. Little is known of its economy except an interesting paragraph or two from Gilbert's observations made in the Port Darwin district.

362.—*PHILEMON CORNICULATUS*, Latham.—(334)

FRIAR BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 58.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 271.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 547 (1865); North: Austr. Mus. Cat., p. 217 (1889); Campbell: Proc. Austr. Assoc., vol. vii., p. 650 (1898).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Large, open, deep, solidly built; composed of strips of stringy-bark; sometimes cocoons and string gathered near habitations are added; inside lined with a good supply of grass; usually suspended or stitched, as it were, by the rim to the forked branchlets of a pendulous limb of a eucalypt, in forest or open forest country. Dimensions over all, 5 to 7 inches by 3 to 4 inches in depth; egg cavity, 4 to 5½ inches across by 2 to 2½ inches deep.

Eggs.—Clutch, three usually, but sometimes four to five; oval or pointed oval in form; texture fine; surface glossy; colour, pale-salmon or yellowish-buff, indistinctly marked with dull-chestnut, and dull-purple spots, especially round the apex. Dimensions in inches of a pair taken in Victoria: (1) 1.3 × .89, (2) 1.3 × .88; of a Queensland set: (1) 1.26 × .86, (2) 1.25 × .87, (3) 1.23 × .87, (4) 1.17 × .86. (Plate 15.)

Observations.—This bird is one of the large Honeyeaters, wearing a drab-coloured coat, lighter in colour on the under surface. It receives its vernacular name, Friar Bird or Leather Head, from its curious naked black head, which has a wart-like excrescence on the nose; eyes, dark-brown; length, 13 inches; wing, 6 inches; tail, 5½ inches; bill, 1½ inches; feet, 1¼ inches.

This remarkable Honeyeater, with its curious appearance and chattering calls, is not only well-known in collections, but likewise to all bush folk. It ranges over much of Australian forest and open country alike, west and north excepted.

Gould regarded the Friar Bird as a summer visitant to the more southern limits of its range. Probably he was correct, and its visits may be regulated by seasons, and the blossoming of various eucalypts. One season (about 1870) these birds were in great numbers in the district of Springvale, Victoria, and no doubt in other localities contiguous. The forest everywhere resounded with their vocalisation. We shot as many birds for the table as our bags could conveniently hold. If a bird were wounded we soon learnt to be careful of its bill and powerful claws.

I shall always recollect my first Leather Head's nest, which I took as a boy. On the 9th November, of the season mentioned, we found a nest building, or about ready for eggs, in a medium-sized tree near Fern-tree Gully, at the base of the Dandenongs. A fortnight afterwards we walked from what is now Armadale to the ranges and back in one day—forty-five miles—for the precious set of eggs. Of course, we also found other species of eggs—Thickheads', Fantails', Robins', &c.

Gould states the Friar Bird commences breeding in November, when the birds become animated and fierce, readily attacking Hawks, Crows, and Magpies, or other larger birds that may venture within the precincts of the nest, never desisting from the attack until they are driven a considerable distance. So numerous did Gould find the Friar Bird breeding in the apple-tree (*Angophora*) flats, near Aberdeen and Yarrundi, on the Upper Hunter, New South Wales, that he remarks the birds might almost be termed gregarious.

I take the following interesting notes relating to the Friar Bird from Mr. Hermann Lau's MS.:—"Not gaudy in plumage, nevertheless of great interest. With it everything is odd. The tongue, unique in itself, expresses laughable articulations. The naked cowl-like head looks ridiculous. Impudent and daring, it steals material for its nest whenever a chance offers. The wool-shed of a station is very handy, where it finds twine and wool. It was at Yandilla (Queensland) where I found a nest wholly constructed of these two articles. At another place (Warroo) the greater part of a nest was, I believe, about ¼-lb. of twine. This stuff the bird wound within and out and round the neighbouring branches, at the same time sewing it into a substantial grass nest padded with wool. Far from habitation, it takes for its nest the produce of land—dry grass—save now and then you will see a string or ribbon interwoven and dangling down. The Leather Head is a bold orchard robber, and, approaching the site of its nest, it darts down like a Magpie, inflicting harm with bill and claws, whenever oppor-

tunity offers. I once killed such an infuriated bird with a stick. Breeds twice in a season, laying three to five eggs. Partly migratory. All over the Darling Downs. Nests generally in October."

Breeding months August or September to December.

363.—PHILEMON ARGENTICEPS, Gould.—(336)

SILVERY-CROWNED FRIAR BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 59.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 272.

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland.

Nest and Eggs.—See Appendix.

Observations.—As Gould points out, the Silvery-crowned Friar Bird is somewhat inferior in size to the common species (*P. corniculatus*), from which it may also be distinguished by the crown of the head being adorned with well-defined, small, lanceolate feathers.

364.—PHILEMON BUCEROIDES, Swainson.—(335)

HELMETED FRIAR BIRD.

Figure.—Gould: Birds of Australia, fol., supp., pl. 44.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 272.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883), also Proc. Austrn. Assoc., vol. vii., p. 652 (1898).

Geographical Distribution.—Northern Territory and North Queensland.

Nest.—Open, bulky, somewhat loosely constructed; composed of grass (including roots) and strips of melaleuca bark interwoven—in one example is a rag and a piece of hay-band; inside lined with long, pliable, dark-coloured twigs; usually suspended in a fork at the extremity of a branch, in forest country. Dimensions over all, 8 to 9 inches by 7 inches in depth; egg cavity, 5 inches across by 3 inches deep.

Eggs.—Clutch, three to four, occasionally five; lengthened in form or oval; texture fine; surface slightly glossy; colour, different from those of the other known species of the genus, being pinkish-white, boldly and beautifully blotched and splashed, especially on the larger end, with brownish-red and purple, the rest of the surface or intervening spaces being minutely dotted with the same colours.

Dimensions of a clutch in inches: (1) $1.28 \times .87$, (2) $1.26 \times .88$, (3) $1.25 \times .88$. Three from another clutch of five, taken on Magnetic Island, near Townsville, 1893, give: (1) $1.24 \times .91$, (2) $1.22 \times .91$, (3) $1.2 \times .9$. (Plate 15.)

Observations.—This fine bird is restricted, as far as is known, to Northern Queensland, including the Gulf of Carpentaria district, where it represents the ordinary Friar Bird of southern latitudes.

In 1893 Mr. D. Le Souëf found the Helmeted Friar Bird numerous in the Bloomfield River district, where it commenced nest building about the end of October. He was presented with a splendid nest by Mr. T. A. Gulliver, who obtained it from Magnetic Island, near Townsville. This example, together with three eggs (there were originally five), found their way into my collection. The nest seemed to have been attached to mangroves.

Mr. Harry Barnard, while collecting at Cape York, found many nests with beautiful sets of eggs during the months of November, December, and January.

365.—PHILEMON CITREOGULARIS, Gould.—(337)

YELLOW-THROATED FRIAR BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iv., pl. 60.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 277.

Previous Descriptions of Eggs.—Campbell: Southern Science Record and Nests and Eggs Austr. Birds, pl. 1, fig. 337 (1883); also Proc. Austr. Assoc., vol. vii., p. 653 (1898); North: Austr. Mus. Cat., p. 219 (1880).

Geographical Distribution.—Northern Territory (?), Queensland, New South Wales, Victoria, South and West Australia.

Nest.—Cup-shaped; loosely constructed; composed of grasses (dry and green), fine twigs, wool, cocoons, &c.; inside lined with fine, dry grass; usually suspended from a pendulous branch of a eucalypt, sometimes near or overhanging water, in open forest. Dimensions over all, 5 inches by 4 to 6 inches in depth; egg cavity, 3 inches across by $2\frac{3}{4}$ inches deep.

Eggs.—Clutch, three to four, one instance five; nearly oval in form; texture fine; slight trace of gloss on surface; colour, pinkish or purplish-buff, indistinctly smudged or blotched with chestnut or umber, and chiefly light purplish-brown. Dimensions in inches of two taken from a clutch in Riverina: (1) $1.09 \times .77$, (2) $1.07 \times .76$. A clutch of three from Central Queensland are of a pinker coloured buff, and more distinctly blotched and spotted with chestnut or reddish-brown and purplish-brown: (1) $1.1 \times .75$, (2) $1.07 \times .76$, (3) $1.05 \times .75$. (Plate 15.)

Observations.—This smaller and plain-coloured Friar Bird is a dweller in almost the whole of the great interior tract of Australia suited to its habits, except, perhaps, the north and north-west.

My introduction to this species was in November, 1877, at Wentworth, on the Darling River, where the birds, with chattering voices, were ravishing the bell-shaped flowers of imported trees (*Lagunaria*)—known on Norfolk Island as the “cow-itch” tree—that bordered the streets. On the Prince of Wales’ birthday, when a picnic of the townsfolk was being held up the river, having proceeded thither by steamboat, I found my “record” nest, within reach, in a bough overhanging the river bed. The eggs, however, were much incubated. Another nest I found subsequently was placed in a low box (*Eucalyptus*), and contained a lovely fresh set of three richly coloured eggs.

From Mr. Hermann Lau’s MS. I take: “Mocking Bird—*P. citreogularis*. It is not unlike the ordinary species, with the exception of being smaller and having no protuberance over the bill root. Its nest is more simply made from dry grass, with rootlets for a lining. The site chosen for the cradle is the dense foliage of an apple-tree (*Angophora*), not high up. The number of eggs is always four. Found in open forest on the Darling Downs, Tummaville, October, 1868.”

Breeding months, August to December.

366.—PHILEMON CITREOGULARIS (sub-species) SORDIDUS, Gould.—(338)

LITTLE FRIAR BIRD.

Reference.—Cat. Birds Brit. Mus., vol. ix., p. 277.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 52, pl. 3, fig. 16 (1882); North: Austr. Mus. Cat., pl. 12, fig. 3 (1889); North: Trans. Roy. Soc., South Australia, vol. xxii., p. 150 (1898); Le Souéf: Victorian Naturalist, vol. xvi., p. 68 (1899).

Geographical Distribution.—North-west Australia, Northern Territory, and North Queensland.

Nest.—Cup-shaped in form, and is outwardly constructed of dried grass stems and long strips of very fine bark-fibre, held together with the indumentum of some composite plant, the inside being lined entirely with dried grasses. Exterior measurements, $3\frac{3}{4}$ inches in diameter by $5\frac{1}{2}$ inches in depth; internal diameter, $2\frac{1}{4}$ inches by $3\frac{1}{2}$ inches in depth (North).

Eggs.—Clutch, two to four; inclined to oval in shape; texture of shell fine; surface very slightly glossy; colour, pinkish or pinkish-buff, spotted and clouded with rufous-brown and purplish-brown of different shades, some of the dull-purplish (underlying) markings being large and irregularly shaped. Dimensions in inches

of odd examples from North-west Australia: (1) $1.13 \times .75$, (2) $1.1 \times .77$, (3) $1.09 \times .74$, (4) $1.08 \times .75$. Resemble those of the Yellow-throated Friar Bird.

Observations.—This northern Friar Bird is very similar to the Yellow-throated, the more southern and interior species, but is smaller in all its measurements except the bill, which is larger. In the neighbourhood of the Fitzroy River, North-west Australia, Mr. G. A. Keartland observed many of the nests of this Friar Bird, but only two eggs were obtained. The nests were usually made of coarse grass, cup-shaped, and were placed in the drooping foliage of a eucalypt.

Dr. Ramsay gives the habitat as far south as the Dawson River district, and described the nest and eggs from the collection of the Messrs. Barnard of that locality, who, however, are not aware that that particular species is found in their neighbourhood.

Mr. A. J. North, in the "List of Birds" collected by the Calvert Expedition (Trans. Roy. Soc., S.A., vol. xxii., p. 150), furnishes some excellent critical remarks on this and the preceding species. Further evidence has proved that Dr. Ramsay's *P. occidentalis* is *P. sordidus* in immature plumage.

Breeding season, October to February or later.

FAMILY—DICÆIDÆ: FLOWER PECKERS.

367.—DICEUM HIRUNDINACEUM, Shaw.—(358)

FLOWER PECKER OR MISTLETOE BIRD.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 34.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 19.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, 2nd ser., vol. i., p. 1093 (1886); North: Austr. Mus. Cat., p. 236 (1889).

Geographical Distribution.—Whole of Australia.

Nest.—Pear-shaped, with a lateral slit-like entrance; soft and elastic to the touch; composed entirely of spiders' cocoons (sometimes white in colour, sometimes greenish), coated with brownish downy seeds and the dark excreta of wood-eating insects. Another example is soft and felt-like, and constructed throughout of a downy vegetable substance of a brownish colour; round the entrance hang globules of insect excreta; usually suspended to a twig or branchlet of a wattle (*Acacia*), eucalypt, bursaria bush, &c., at a distance varying from three feet to twenty feet from the ground. Dimensions: length 3 inches, greatest breadth 2 to $2\frac{1}{4}$ inches, entrance 1 to $1\frac{1}{4}$ inches long by $\frac{1}{2}$ to $\frac{3}{4}$ inch across.

Eggs.—Clutch, three, occasionally four; lengthened in form, or oval; texture exceedingly fine; surface slightly glossy; colour,

pure white. Dimensions of a clutch in parts of an inch: (1) $\cdot 68 \times \cdot 44$, (2) $\cdot 65 \times \cdot 43$, (3) $\cdot 64 \times \cdot 42$.

Observations.—Wherever in Australia the *Loranthus* burdens the trees—whether the red-gums (*Eucalyptus*) in the east, or the jam-wood (*Acacia*) in the west—there will surely, at some time of the year, be found that endearing little bird, the Swallow *Dicaeum* or so-called Flower Pecker. No *Dicaeum* is found in Tasmania, probably for the reason that no mistletoe growths exist there.

On the Continent the bird is more plentiful than one supposes, its tiny body, no doubt, escaping general observation. The total length is only $3\frac{1}{2}$ inches. When the little shapely creature, in lustrous blue-black coat, strikingly relieved with a scarlet throat, breast, and under tail coverts, is threading the slender golden green branches of the mistletoe, you have a contrast in colouring which it would be difficult to excel for beauty in the whole realm of nature. The female *Dicaeum* has a duller coloured dress than the male, and can at once be distinguished by her buffy-brown throat and breast, where the male has scarlet.

I have shot the bird in Northern Queensland, seen it feasting on the glutinous globules of the mistletoe on the silver wattles that fringe the Murray, and observed it at home in my own garden feeding upon the red berries of the pepper-tree (*Schinus*), during winter. The loranthus berries, excepting the outside casing, are devoured whole, and in passing through the bird the seed remains uninjured. While threading the mistletoe clusters the male bird frequently pauses awhile to utter a twittering song, singing inwardly as if to himself. The sound is quite different to the bird's high-pitched call-note.

Gould states he found the *Dicaeum* breeding on the Lower Namoi, New South Wales, and describes its pensile nest; but his examples of eggs must have become mixed, when he mentions that the dull white eggs have "very minute spots of brown scattered over the surface," because my experience, and the experience of every collector with whom I am acquainted, is "that the eggs are *uniformly white*."

According to the "Catalogue" of the Australian Museum, Sydney, one of its collectors, Mr. J. A. Thorpe, found the Swallow *Dicaeum* breeding at Cape York, 1866-7, and obtained both nests and eggs. The interesting information is also stated that Dr. Hurst obtained a nest on the Parramatta River, near Sydney, that took six weeks from the time the nest was commenced till it was completed, and the full complement of three eggs laid therein.

I have received the tiny bag-like nests of the Flower Pecker, not only from Queensland but also from different parts of Victoria, notably the Wimmera and Camberwell, near Melbourne, where a nest was found suspended to a branchlet of a black wattle (*Acacia*). (See illustration of similar instance), while I found in the romantic Werribee Gorge, under interesting circumstances, a nest containing three eggs, on the Prince of Wales' birthday, 9th November, 1895. In connection with a photographic club camp-out we were pitching tents, when my attention was first drawn to a Flower Pecker, with exceedingly bright scarlet throat and under tail coverts that perched on a naked twig close by.



FLOWER PECKER'S NEST.

From a Photo by the Author



RUFOUS SONG LARK'S NEST

From a Photo by the Author.



Whilst at lunch, under the trees, the female appeared, and after hopping about disappeared into a nest about ten feet from the ground, in the sapling (a eucalypt), that supported the rear end of our tent. The nest was so small and well hidden amongst the twigs of the upper branch, that it had escaped observation before. The nest was quickly sounded—result, no eggs. The hen returned at dusk and remained in the nest till sun-rise, when the male sweetly called her out. We were absent most of that day, and consequently did not observe what occurred at the nest; but at eve the hen returned as on the previous day. The following morn (11th), when we left, the nest contained an egg; and subsequently when the full clutch (3) was laid, the Messrs. Brittlebank, who live in the neighbourhood, kindly took the nest and contents for me. The nest was composed of sheep's wool, down off the clematis seeds, silky substance from spiders' cocoons, and coated with brownish portions of seeds from banksia cones and excreta of wood-borers (caterpillars).

Following up this cue, the same season Mr. C. C. Brittlebank found two other nests on the 15th and 18th November respectively, in the Gorge; one at a height of only three feet from the ground, the other on the opposite side of the river in a tall tree. Both nests, as in my case, were in eucalypts and contained each three eggs. In order to find these nests Mr. Brittlebank had to exercise more than ordinary perseverance, tracking the birds to their little homes for a considerable distance, not over pleasant park-like country, but over rugged rocks and gullies. Mr. Brittlebank made the interesting observation that these perfect little birds gather the material for nest building when they are on the wing—after the fashion of the Humming Birds,—flying up and down close to the branch or twig while collecting the stuff.

The next season, in the same locality, also in November, my son Archie discovered a Flower Pecker building a few feet from the ground in a bursaria bush. Again in November (1899), near our camp in the Lerderg Ranges I found a *Dicaeum's* nest in a gum sapling, the nest being remarkably beautiful by reason of the golden-green moss with which it was constructed.

The following is a field note from Mr. W. B. Barnard, made in the Bloomfield River district, at Northern Queensland: "*Dicaeum hirsutinaceum*. Found nest on the 27th October (1893), in the forest country. Nest about four inches long; composed of the fluff off the zamia-tree, and suspended from a twig four feet from the ground; entrance at side; three pure white eggs."

Mr. H. P. C. Ashworth, in a brief paper on "The Dispersal of Mistletoe," which appeared in the "Victorian Naturalist" (1895), referring to the Swallow *Dicaeum*, says: "Intent on observing them I set off one day with a telescope to the junction of Gardiner's Creek with the Yarra, where there is a fine clump of box trees, covered with mistletoe. After watching the birds for some time through the telescope, I found that they first plucked a berry, then repaired to a larger bough, whence after a few moments the berry was dropped. I had always thought that the berry was eaten whole, but on picking one up the mystery was solved, for it was empty; the seed, with its glutinous

covering, had been abstracted through an opening in the top, formed by biting it nearly through, leaving a lid. Nor is this all, for in the act of picking the fruit, a small hole is left where the stalk joined it, and this must greatly facilitate the sucking or squeezing out of the contents. During the whole process the bird uses only its beak. The ground underneath each of the trees was strewn with several hundreds of these discarded berries, each with its lid at one end and the small hole at the other."

In January, 1898, at the Richmond River district, Mr. W. T. Bailey found a *Dicaeum's* nest, with the unusually full complement of four eggs.

Breeding months, October to January, and in good seasons in the south to February. In some localities, probably, the season varies; for instance, in Northern Queensland I saw youthful *Dicaeums* in July, which did not appear more than six weeks old.

368.—*PARDALOTUS ORNATUS*, Temminck.—(84)
P. striatus, Temminck.

RED-TIPPED PARDALOTE.

Figure.—Gould: *Birds of Australia*, fol., vol. ii., pl. 38.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 55.

Previous Descriptions of Eggs.—Gould: *Birds of Australia* (1848); also Handbook, vol. i., p. 161 (1865); Ramsay: *Ibis*, p. 298 (1865); North: *Austn. Mus. Cat.*, app. (1890); Campbell: *Geelong Naturalist*, vol. iv., p. 54 (1895).

Geographical Distribution.—Queensland, New South Wales, Victoria, South and West Australia..

Nest.—Constructed of fine grasses, with sometimes soft bark and feathers added, and compactly built (usually cup-shaped), within a hollow of a tree. Frequently placed in the roof of an outbuilding, such as a shed or dairy, or in the deserted mud-built nest of the Fairy Martin (*Petrochelidon ariel*). In some instances the nest is placed underground, the tunnel being about 10½ inches in length; terminal chamber 4½ inches in diameter.

Eggs.—Clutch, three to five, usually four; roundish oval in shape; texture of shell fine; colour, pure white, with a glossy surface. Dimensions in inches of a clutch: (1) .72 × .57, (2) .7 × .56, (3) .7 × .56, (4) .69 × .54.

Observations.—The exceedingly fine Red-tipped, or as the bird is frequently called, Striated Pardalote, I have observed breeding both in the east and west of the southern portion of Australia. It is not found in Tasmania, but ranges northward to the southern part of Queensland, and may be known by its general brownish dress above, with yellowish under parts; top of head black, wings dark, external

edges of most of the feathers margined with white; over the nose is a yellowish-orange stripe, while the tips of the spurious wings are red, hence the vernacular name.

The fact that the Red-tipped Pardalote occasionally breeds underground was clearly proved by Mr. C. F. Belcher, who found a nest containing four eggs in a bank of a creek at Pollock's Ford, near Geelong, on the 11th November, 1896. A bird captured in the nest was kindly sent to me for identification.

Dr. W. Macgillivray, writing to me from Coleraine, Victoria, says: "The Striated (or Red-tipped) Pardalote is very numerous here. I have found several of their nests, all during last month (November). They seem to nest in company, several nests being generally within a few yards of one another, either in the ground or in a tree. The nests have a very compact base, but are not roofed to the same extent as those of *P. affinis* and *P. punctatus*. One nest that I found had no roof at all. Another nest was constructed mainly of pine needles, which must have been gathered at a plantation fully a quarter-of-a-mile away."

In some valuable Queensland notes that Mr. Hermann Lau was induced to compile for me, under the heading of "Striped Diamond Bird," he says:—"Early in spring, when you are going along an embankment, you are greeted by short 'chuck-chuck' notes. Upon looking round, a sweet, stumpy-tailed bird hops lively from bough to bough almost within your grasp. By so doing it betrays its nest, which you will be sure to find either in the bank or in a small hole of a lying log. The tunnel in the bank has a depth of from two to three feet. At the end will be found the nest, prepared of grass and well feathered, disclosing four white eggs.

"My workroom at Yandilla had, in one of the slabs, an auger-hole an inch in diameter, once used for a peg to hang up a saddle. Through this hole the little chap often used to come, and very pleasant it was for me while working to hear its young chicks, when being fed, chirping between the canvas and the slabs. On one occasion, in August, 1877, I found a nest with four young in a hole fifteen feet up in a living eucalypt."

Whether Mr. Lau's descriptive remarks refer to this or another Pardalote, I had personal proof of the Red-tipped Pardalote, which is usually a builder in trees, breeding in a bank of a creek in the Sandhurst district, Victoria, but whether the bird drilled the burrow itself, I could not ascertain.

However, it would appear that the Red-tipped Pardalote does burrow for itself, as in the Australian Museum Catalogue (North) the following remarks occur: "In the paddocks (Wattagoona Station, near Louth), Mr. E. L. Ramsay obtained their nest from the sites usually chosen by this bird, the hollow limbs of trees, and on several occasions found them breeding in company with *Cheramacca leucosternum* in a hole in the side of a bank of a creek; they prefer, however, to tunnel a hole where the earth is harder than the site usually chosen by the White-breasted Swallow for its nest. When resorting to the bank of a creek, Mr. Ramsay informs me the nest is cup-shaped, with a short

spout, and is composed entirely of wiry rootlets and grasses, neither bark or feathers being used, as when placed in the hollow limb of a tree, and that the burrows of the Pardalote can easily be detected from those of the White-breasted Swallow by being smaller and rounder."

We know it is a trait in the character of this Pardalote, especially in the interior, to occupy the old homes of other birds, notably the snug nest of the Fairy Martin. This fact was known to Dr. Ramsay long ago, and he states, with regard to the Striated Pardalote, in speaking of a visit to the Bell River, in the Molong district:—"They took possession of their usual breeding places—a batch of old nests of the Fairy Martin (*Petrochelidon ariel*). These they lined with grass and stringy-bark, making a nest similar to that of *Pardalotus punctatus*.

"About three weeks after the Pardalotes had taken possession of these nests, the rightful owners returned, but finding the usurpers unwilling to turn out, the Martius contented themselves by building new nests, and repairing those that had been broken down."

The breeding months are from September to December, perhaps including January, during which period probably two or more broods are reared. One extraordinary season eggs were taken in the Mallee during July. Both parents assist in incubation.

At Chinchilla, Queensland, Mr. K. Broadbent found what he believed to be a local race of *P. striatus (ornatus)*, which has the first and third primaries only, instead of the whole number, edged with white, while the speculum is uniform scarlet in colour.

369.—*PARDALOTUS ORNATUS* (sub-species) *ASSIMILIS*, Ramsay.

ORANGE-TIPPED PARDALOTE.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 56.

Geographical Distribution.—Queensland, New South Wales, and Victoria.

Nest and Eggs.—Resemble those of the Red-tipped Pardalote (*P. ornatus*) and placed in similar situations.

Observations.—Mr. Robert Hall's diligence as a field naturalist was rewarded by his finding *P. assimilis* in Victorian forests. A note of the occurrence appeared in the Proc. Linn. Soc. New South Wales, 1899, p. 472, as "A phase of the Sub-species *Pardalotus assimilis*, Ramsay." When one has to divide a sub-species into phases, there is a tendency to an over elaboration of details, so perplexing to students. But possibly Mr. Hall is correct by pointing out these phases, and wishes to prove that they are merely intermediate between *P. ornatus* and *P. affinis*; therefore, *P. ornatus*, *P. assimilis*, and *P. affinis* are synonymous. *P. ornatus* and *P. assimilis* may be so, but *P. affinis* must stand as a good species. Gould was a keen discerner of species. Moreover, Mr. Hall will have great difficulty in proving the speculum

of *affinis* in Tasmania (its true home) is any other colour than yellow. While, I think, in Western Australia, the extreme western habitat of *ornatus*, he will find no yellow specula, but all red.

370. PARDALOTUS AFFINIS, Gould.—(85)

YELLOW-TIPPED PARDALOTE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 39.

Referenc.e.—Cat. Birds Brit. Mus., vol. x., p. 57.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 164 (1865); North: Austr. Mus. Cat., p. 51 (1880); Campbell: Geelong Naturalist, vol. iv., p. 56 (1895).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia, and Tasmania (including some of the Bass Strait islands).

Nest.—Constructed of grasses, strips of bark and feathers, usually built within a hole of a tree, sometimes near the ground, at other times at a considerable height. Occasionally the nest is placed underground in a bank.

Eggs.—Clutch, three to five, usually four. Somewhat round or roundish oval in shape; texture of shell fine; pure white, with glossy surface. Dimensions in inches, large example, $\cdot77 \times \cdot58$; small example, $\cdot6 \times \cdot56$. Set in Mr. E. D. Atkinson's collection (Tasmania): (1) $\cdot77 \times \cdot58$, (2) $\cdot77 \times \cdot58$, (3) $\cdot77 \times \cdot57$.

Observations.—This is the Tasmanian and southern form of the Red-tipped Pardalote, the Orange-tipped variety of New South Wales and Queensland being an intermediate species.

The "Allied" Pardalote, as it is nondescriptly called, may be distinguished from the Red-tipped species, which it much resembles, by having the tips of the spurious wings *yellow* instead of *red*, hence the more appropriate and distinguishing terms, "Yellow-tipped" and "Red-tipped."

The duration of the breeding season applies alike to the two species. Gould, on reference to his journal, says:—"I find that near George Town, on the 8th of January, 1839, I took from a nest in a hole of a tree, five fully-fledged young. The nest in this instance was of a large size, and of a round domed form like that of the Wren (European), with a small hole for an entrance; it was outwardly composed of grasses and warmly lined with feathers."

Although the Yellow-tipped Pardalote usually resorts to timber for breeding, it appears to be addicted to terrestrial quarters sometimes, for, according to a correspondent, Mr. Arthur E. Brent, the nests are found "both in trees and in the banks of sand on the shores of the Derwent, where the birds abound in numbers during the breeding season."

371.—*PARDALOTUS PUNCTATUS*, Shaw.—(81)**SPOTTED PARDALOTE (DIAMOND BIRD).**

Figure.—Gould: *Birds of Australia*, fol., vol. II., pl. 35.

Reference.—Cat. *Birds Brit. Mus.*, vol. X., p. 58.

Previous Descriptions of Eggs.—Gould: *Birds of Australia* (1848); also *Handbook*, vol. I., p. 158 (1865); Ramsay: *Ibis*, p. 272 (1868); North: *Austn. Mus. Cat.*, p. 49 (1889); Campbell: *Geelong Naturalist*, vol. IV., p. 58 (1895).

Geographical Distribution.—Queensland, New South Wales, Victoria, South and West Australia, and Tasmania, including some of the islands in Bass Strait.

Nest.—Spherical in shape, outwardly about four or five inches in diameter by two-and-a-half inches inside, with a small side entrance, constructed of soft strips and shreds of the inner bark of eucalypts, and lined inside with finer shreds of the same material, and sometimes with grass and feathers, and situated underground in a bank, or in the side of any convenient hole in the forest. The birds first drive a small tunnel from a foot to three feet in length in a slightly upward direction, and then excavate a chamber to accommodate the nest. Occasionally the nest is in an old log.

Eggs.—Clutch, four, sometimes five; somewhat round in shape; texture of shell very fine; colour, pure white, with a slightly glossy surface. Dimensions in inches of a full set taken near Oakleigh, 30th October, 1886: (1) $\cdot 66 \times \cdot 52$, (2) $\cdot 64 \times \cdot 51$, (3) $\cdot 61 \times \cdot 51$, (4) $\cdot 63 \times \cdot 52$.

Observations.—The Spotted Pardalote, sometimes called Diamond Bird, with its pretty, neat, little figure, is the most familiar of its kind to us. The bird is distributed generally over Australia from east to west, and from Tasmania in the south to Rockingham Bay district in Northern Queensland.

The plumage of the Spotted Pardalote is so variegated and beautiful as to render a precise description in words difficult. Upper surface black and grey, with large spots of white near the tip of each feather; under parts of a tawny appearance, except the throat, chest, and under-tail coverts, which are yellow; upper tail coverts crimson; bill blackish, and eyes brown. Total length, only $3\frac{5}{8}$ inches.

The wonderfully wrought underground nests of the Spotted Pardalote, with the entrance to the tunnel frequently artfully hidden by overhanging vegetation, roots, &c., I have found in eastern forested parts as well as under the shade of the beautiful-leaved eucalypts of the west. I have also found them in the loose friable sand in an abrupt bank near the sea shore, such as at Western Port, Victoria, where the birds were burrowing in numbers in October, 1880. A nest I found in a West Australian forest was only eight or nine inches in the ground, with a chamber $3\frac{1}{2}$ inches in diameter.

As has been remarked, it is truly wonderful how the little builder can construct so comfortable a home at the termination of a hole where all possible daylight is excluded. Both male and female assist in the drilling operations and construction of the nest. Sometimes a previous season's nest is renovated.

With reference to the Spotted Pardalote being an early breeder in Victoria, a note from Mr. C. C. Brittlebank, dated 19th August, 1893, says: "Male Diamond Bird collecting till his bill is full of bark, which he gives to his mate; he then collects his own load and carries it to the nest." Ten days afterwards Mr. Brittlebank found the pretty birds still at work.

Dr. Ramsay observes that the Spotted Pardalote sometimes chooses for its nest a small hole in a log, a crevice in an old wall, a niche under a shelving rock, &c.; still he has never known it to breed in the hollow branch of a tree, or take possession of the mud nests of the Fairy Martin, as the Red-tipped (*P. ornatus*) and the Yellow-tipped (*P. affinis*) Pardalotes sometimes do.

The breeding season is included in the months from July to December.

372.—*PARDALOTUS XANTHOPYGIUS*, McCoy.

YELLOW-RUMPED PARDALOTE.

Figure.—Gould: Birds of Australia, fol., supp., pl. 8.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 59.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1885); North: Austn. Mus. Cat., p. 50 (1889); Campbell: Geelong Naturalist, vol. iv., p. 59 (1895).

Geographical Distribution.—New South Wales, Victoria, South and West Australia.

Nest.—A mouse-like hole, drilled into the flat, hard surface of the ground in an oblique direction for about two feet. At the termination is a cavity thickly walled with interwoven strings of soft bark. The nest is perfectly round, with the side entrance opposite, and leading directly out into the little tunnel.

Eggs.—Clutch, four; roundish oval in shape; texture of shell fine; colour, pure white with glossy surface. Dimensions in inches of a set: (1) $\cdot 62 \times \cdot 51$, (2) $\cdot 6 \times \cdot 52$, (3) $\cdot 6 \times \cdot 5$, (4) $\cdot 59 \times \cdot 5$.

Observations.—The Yellow-rumped Pardalote is even more beautiful than the Spotted Pardalote, and, as its name suggests, its bright-yellow rump and upper tail-coverts are conspicuous. I unhesitatingly say that this Pardalote is the most beautiful yet discovered.

The Yellow-rumped Pardalote is a denizen of the drier and almost waterless tracts of the southern interior and Western Australia. My

brother, Mr. W. R. G. Campbell, I believe, took the first authenticated nest of this species in the mallee (a species of dwarf eucalypt) scrub in the Wimmera district, Victoria. Subsequently, on the 21st October, 1884, I took another nest in the same locality. The tunnel extended for twenty-two or twenty-three inches, whilst the nest itself was about ten inches below the surface of the ground.

Unlike the previous species, the Spotted, the Yellow-rumped Pardalote commences to burrow on the flat surface of the ground under shelter of the mallee, instead of selecting a perpendicular or even inclined bank.

Probably the first person to recognise this pretty Pardalote as a new species was Mr. William White, Reed-beds, South Australia. Further inland, Mr. Samuel White procured others and sent specimens to Gould in 1865. Gould intended dedicating the bird to Mr. White, but on account of its extreme beauty he afterwards thought to name it after Queen Victoria. In the meantime, however, he was anticipated by Professor McCoy's descriptive title, *xanthopygius*.

The breeding months are chiefly September, October, and November. One extraordinary season Mr. C. McLennan took eggs in March, June, July, and August (1899). The same season, in September, I chanced to find a nest near a bush track in the Mallee. It was 4 inches in diameter, and only 4 inches from the surface of the sandy soil. The little tunnel was 14 inches in length, having an oblong entrance $\frac{2}{3}$ by 1 inch across.

373.—*PARDALOTUS RUBRICATUS*, Gould.—(82)

RED-BROWED PARDALOTE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 36.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 60.

Previous Descriptions of Eggs.—Ramsay: Proc. Zool. Soc., p. 350 (1877); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. ii., p. 110 (1878); Campbell: Geelong Naturalist, vol. iv., p. 61 (1895).

Geographical Distribution.—Northern Territory, Queensland, New South Wales, South, West, and North-west Australia.

Nest.—Similar in construction and situation to those described of *P. punctatus* and *P. melanocephalus*.

Eggs.—Clutch, three to four; inclined to oval in form; texture of shell fine; colour, pure white, with surface slightly glossy. Dimensions in inches: (1) $\cdot 78 \times \cdot 55$, (2) $\cdot 74 \times \cdot 55$.

Observations.—The Red-browed Pardalote is the largest of its genus, and enjoys a somewhat extensive range across the northern part of Australia, besides dipping a good way south into the great interior province. Mr. Tom Carter found it in the region of the North-west

Cape, where, he remarks, "It is a difficult bird 'to spot' in the white gum-trees."

Dr. Ramsay states:—"From letters received from Mr. William E. Armit, I learn that this species is by no means rare on the Norman River (Queensland), and is also found rather plentiful on the Etheridge River. It comes as far south as Georgetown, where Mr. Armit obtained nests and eggs. Like *P. punctatus*, *P. melanocephalus*, and *P. uropygialis*, this species digs holes or tunnels in the banks of creeks, &c., making a long narrow tunnel from two to three feet in length, at the end of which it excavates a chamber large enough to contain the nest, which is about four inches in diameter. This round chamber is lined on all sides, both above and below, with fine grasses, except a small hole for exit opposite the tunnel."

The specimens of eggs described by me were taken by the Messrs. Barnard, Coomoooolaroo, Queensland, the parent or parents being identified by skins forwarded to the Australian Museum, Sydney.

Mr. K. Broadbent, in his account of "The Birds of Charleville,"* states, the Red-browed Pardalote is essentially a bird of the interior. He first noticed it on the 19th September, after which date it was tolerably abundant. It breeds in the district, utilizing for this purpose the burrows of the Billbie (*Hypsiprymnus grayii*), and always excavates the hole for its nest in some perpendicular portion of them. During the day the Red-browed Pardalote frequents the tops of the loftiest eucalypts, in company with the Black-headed Pardalote, where the former may be recognised by its characteristic call, resembling that of the Pale-headed Parrakeet (*P. pallidiceps*)—a low sort of whistle, made when stationary in its haunts.

Eggs have been taken during June, July, and August.

374.—PARDALOTUS MELANOCEPHALUS, Gould.—(86)

BLACK-HEADED PARDALOTE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 40.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 60.

Previous Descriptions of Eggs.—Ramsay: Proc. Zool. Soc., p. 584 (1875); Diggles: Companion Gould's Handbook (1877); Campbell: Southern Science Record (1883); North: Austr. Mus. Cat., p. 52 (1889); Campbell: Geelong Naturalist, vol. iv., p. 60 (1895).

Geographical Distribution.—Queensland and New South Wales.

Nest.—Similar to that of *P. punctatus*. Constructed of bark and grasses, and placed in a cavity at the end of a tunnel, usually excavated in a bank of a creek or waterhole or side of well.

* Proc Roy Soc, Qd, vol. iii. (1885)

Eggs.—Clutch, three to four, usually the latter number; roundish in form; in some clutches the smaller ends are of a peculiar blunt shape; texture of shell fine; colour, pure white, with a trace of gloss on the surface. Dimensions in inches of full set taken near Townsville (Queensland), 19th September, 1885: (1) $\cdot 64 \times \cdot 53$, (2) $\cdot 65 \times \cdot 53$, (3) $\cdot 66 \times \cdot 52$, (4) $\cdot 65 \times \cdot 52$.

Observations.—The Black-headed Pardalote is another interesting bank burrower, ranging throughout the greater part of Eastern Australia.

In Gould's time it was uncertain whether this bird nidified in holes of trees or in the ground, and he left the matter to those persons favourably situated to ascertain. Dr. Ramsay was the first to settle the question in 1875. The Black-headed Pardalote is an early breeder. During my Queensland trip, in 1885, I noted them burrowing as early as July. On the last day of that month we took from the bank of the Meunga Creek, near our camp, Cardwell, a nest containing three eggs. On the 3rd August we took the contents (three eggs) of another nest which was tunnelled into the side of a hollow where a small tree had been uprooted in open forest. (See illustration for similar instance.) Towards the end of September three other nests were taken—one with three eggs and two with the full complement of four each. However, the breeding season usually extends to the end of the year or even to January.

375.—PARDALOTUS UROPYGIALIS, Gould.—(87)

CHESTNUT-RUMPED PARDALOTE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 41.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 62.

Previous Description of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. ii., p. 110 (1878).

Geographical Distribution.—North-western Australia, Northern Territory, Queensland, and South Australia (interior).

Nest.—Similar in construction and situation to those described of *P. punctatus* and *P. melanocephalus*.

Eggs.—Clutch, three to four; roundish or round oval in form; texture of shell fine; surface slightly glossy; colour, pure white. Dimensions in inches of a full clutch from Yorke Peninsula: (1) $\cdot 68 \times \cdot 5$, (2) $\cdot 64 \times \cdot 52$, (3) $\cdot 63 \times \cdot 5$, (4) $\cdot 62 \times \cdot 52$.

Observations.—As far as our knowledge extends, this very fine species completes the quintet of bank burrowing Pardalotes, all of which, as regards their nidification, differ from those that usually build in holes of trees.



NESTING-HOLE OF THE BLACK-HEADED PARDALOTE.

From a Photo by S. W. Jackson.



Again I have to quote Dr. Ramsay, who states:—"This species is an inhabitant of the Gulf of Carpentaria district. I have received it in collections from the Norman River, and also received the head, wings and tail, accompanied with eggs, from Mr. William E. Armit, taken on the Etheridge River, where this gentleman found it breeding in tunnels dug in the banks of creeks and watercourses, in company with *P. rubricatus*. I can see no difference in the eggs of this and those of *P. rubricatus*.* The remarks on *P. rubricatus* are equally applicable to this species also. Mr. Armit assures me that they breed and nest in the same way, and often accompany each other in small troops, searching for insects among the leafy tops of trees. Both species seem to be confined to the inland districts."

376.—*PARDALOTUS QUADRAGINTUS*, Gould.—(83)

FORTY-SPOTTED PARDALOTE.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 37.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 62.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 160 (1865); North: Austr. Mus. Cat., p. 54 (1889); Campbell: Geelong Naturalist, vol. iv., p. 57 (1895).

Geographical Distribution.—Tasmania and King Island.

Nest.—Constructed of soft grasses, bark, &c., and built into a hole or hollow of a lofty green tree.

Eggs.—Clutch, four, roundish or oval in shape; texture of shell fine; colour, pure white, with slightly glossy surface. Dimensions in inches: (1) $\cdot 66 \times \cdot 52$, (2) $\cdot 66 \times \cdot 51$; of a set: (1) $\cdot 64 \times \cdot 51$, (2) $\cdot 62 \times \cdot 53$, (3) $\cdot 58 \times \cdot 53$.

Observations.—This æsthetic-coloured, and the least of Pardalotes, is peculiar to Tasmania and some of the islands in Bass Strait, notably King Island, where we obtained specimens during the Field Naturalists' Expedition, November, 1887. The bird is exceedingly difficult to discover high up in the trees, where its sombre-green coat and light-greyish under parts closely assimilate to the foliage. It measures about $3\frac{1}{2}$ inches in length.

Gould found the Forty-spotted Pardalote numerous in the gullies about Mount Wellington, and observed it breeding in a hole in one of the loftiest trees, at about forty feet from the ground. He also took a properly developed egg from the body of a female that was shot on the 5th October.

Breeding months are from September to January. The eggs of the Forty-spotted Pardalote in my cabinet were taken by Mr. G. K. Hensby, Tasmania, on Denistown run, near Bothwell, Christmas, 1876.

* *P. uropygialis* is the smaller bird, therefore should lay the smaller eggs, or about the size of those of *P. melanocephalus*—A.J.C.

FAMILY—HIRUNDINIDÆ: SWALLOWS.

SUB-FAMILY—HIRUNDININÆ: SWALLOWS PROPER.

377.—HIRUNDO JAVANICA, Sparriman.—(54)

EASTERN SWALLOW.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 142.

Previous Descriptions of Eggs.—Hume: Nests and Eggs Indian Birds (1875)—Oates' ed.—vol. ii., p. 186 (1890); Legge: Birds of Ceylon, p. 599 (1880).

Geographical Distribution.—North Queensland; also New Guinea and adjacent islands, Moluccas, Philippine Islands, Borneo, Sumatra, Java, Malayan Peninsula, India, and Ceylon.

Nest.—Composed of pellets of mud, thickly lined with feathers, open at the top, with the saucer-like depression rather deep; it is usually placed in some building, cave, or against some well-sheltered rock. (Hume-Davidson).

Eggs.—Clutch, three usually; moderately broad oval, compressed towards one end; colour, pinky-white, very finely speckled and spotted, more densely at the large end, where there is a tendency to form a zone, with different shades of dull-purple and brownish-red. Average size about $\cdot 7 \times \cdot 5$ inch. (Hume).

Observations.—Gould possessed only one specimen of this species, which he called the Torres Strait Swallow, shot on the northern shore of Australia by Mr. Raynor, surgeon of H.M.S. "Herald."

378.—HIRUNDO NEOXENA, Gould.—(53)

SWALLOW.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 13.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 144.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 109 (1865); Ramsay: Ibis, p. 275 (1868); North: Austr. Mus. Cat., p. 31 (1880).

Geographical Distribution.—Whole of Australia and Tasmania.

Nest.—Constructed of pellets of mud or clay, strengthened with grass, and warily lined with grasses, feathers, and hair. In shape

like a bisected bowl, cemented to the side of a wall of rock, cave, or cliff, or placed in the hollow of an open tree trunk. But since the advent of civilisation any convenient niche or corner about the roof of buildings—outside under the eaves or inside on the rafters—is selected for the mud-built home. Underneath bridges and piers also offer secure coverts, while many odd places, such as a mining shaft, inside the roof of an old coach, &c., are occasionally chosen. Dimensions: outside 4 inches wide by $3\frac{1}{2}$ inches in depth; inside $2\frac{1}{2}$ inches by 1 inch deep.

Eggs.—Clutch, three to five, but usually four; stout oval in shape; texture of shell very fine; surface glossy; colour, warm-white, speckled or numerously spotted, particularly about the larger end, with umber or reddish-brown and slate. Dimensions in inches of a proper clutch: (1) $.76 \times .54$, (2) $.72 \times .54$, (3) $.72 \times .52$, (4) $.7 \times .54$. (Plate 15.)

Observations.—The principal breeding months of this homely little Swallow are from September to the end of the year. At such times the birds are more numerous in the southern parts of Australia and Tasmania, moving, of course, to more northern climes on the approach of winter. At Cardwell, which is well within the tropics, Mr. K. Broadbent states it is a stationary species, but their numbers must be considerably augmented by southern birds, that, during the winter months, may be seen in hundreds perched on the fences. However, in many southern parts they do not always retire northwards, individuals and small families remaining in their breeding place during winter. Moreover, Dr. Ramsay has found them building in the Dobroyde stables, near Sydney, both in the months of February and June; and on 17th April, 1864, he took a nest with fresh eggs from the same buildings. While Mr. Victor Lemme, writing under date 12th June, 1899, states: "I have now under the verandah of my office, the Junction, St. Kilda, a nest of young Swallows, nearly able to fly."

While I write, I remember three birds within the Presbyterian Church, Toorak, during service one raw morning in June, which made their sweet little voices resound through the sacred edifice. An early July note from Mr. C. C. Brittlebank says:—"Pair of Swallows remained through the winter at Dunbar, near Myrning (Victoria)." As early as 28th July (1894), at Echuca, on the Murray, I saw a pair of the pretty Swallows gathering mud for their nest. The wattles then were just bursting into bloom. Therefore both birds and trees heralded the approach of spring, another "New Year," as it were, for the Australian field naturalists. In Tasmania, the southern limit of this Swallow, Gould states it arrives about the middle or end of September, and, after rearing at least two broods, departs again northward in March.

In more northern latitudes we have the notes left in MS. by our good observer, Mr. Hermann Lau:—"Welcome Swallow.—One of the first birds to meet me on the shores of Australia on 26th November, 1854, after a long voyage, and always awakens within me, whenever

I see the bird, home recollections of the warmest kind. At the Downs, of Queensland, the bird is only a partial migrant. Like the Reed Warbler, the Swallow resembles in all respects its European prototype, with the exception, as far as I know, of not planting its nest inside a chimney where the egress of smoke plays round the edifice. The Swallow makes use of wool-sheds and eaves of houses for the open cradle. In the wilds I have found the nest fixed on a log standing out of water, on a shelf of rock, and once in a lime cave, on the top of a high stalagmite, close under a small opening which led to the exterior world. When in proximity to man, extraordinary situations are sometimes chosen. By Yandilla, a pulsometer, used for irrigation purposes to let down a shaft forty-two feet, had on a spar of its frame a nest neatly placed thereon. At Glenelg (McIntyre Brook), a window-pane in the house of the overseer was out, the Welcome Swallow made use of such an opportunity (opening) by fastening the home of its future generation on to the shelf in the corner of the room where it was protected by the dwellers. But the greatest proof of attachment to human care occurred in the wool-shed of the same place, where the nest was resting on one of the uprights belonging to the screw-press frame, which was constantly moving up and down the whole day for a fortnight, with men pressing wool, while the Swallow was sitting on two eggs, but these afterwards proved rotten, the movement had been too much. As an eye-witness, I can vouch for the truth of this statement."

With regard to remarkable places for nesting, Dr. Ramsay says:—"In 1858, while fishing off a small steamer, which, having been out of use for some months, was moored a few hundred yards from the North Shore, in Sydney Harbour, I observed a pair of these Swallows fly round the boat and frequently dive underneath the paddle-box. After a long search I discovered their nest, which was composed of thick pitchy mud, lined with seaweed and feathers. It was placed upon one of the horizontal beams of the paddle-box, and contained three young ones about half-fledged. The man in charge informed me the nest had been made when the steamer was lying lower down the harbour, and upon its being tugged to where it then lay, the birds flew round and round it the whole time, evidently in a great state of excitement." While mentioning about Swallows building afloat, a pair once used a steamer on the River Murray, and another pair betook to a cutter at Green Island, in Bass Strait.

Mr. Gregory Bateman tells me of an instance he knew of a nest built on a mantel-shelf in a hut in Riverina. The bird allowed itself to be stroked gently on the nest.

"A very interesting item of natural history comes to us from Ocean Grove," wrote the "Melbourne Daily Telegraph," 13th September, 1889:—"One of Cobb & Co.'s coaches leaves Ocean Grove for the nearest railway station every day about 11.30 a.m., reaching the station in time for the noon train from Queenscliff to Melbourne. Inside this coach, which is a small one, a pair of Swallows have commenced to build their nest. On two or three occasions the driver of the coach knocked the nest down, but every day the birds began to

rebuild in the same place, so for the last week they have continued their operations. They await the arrival of the coach and commence at once, continuing their work each day till it starts back to Ocean Grove at three p.m. They then remain in the neighbourhood till the coach returns the following day, when their efforts are at once renewed. On examination of the nest, it would seem as if the poor birds had in some measure realized the situation of things, for the mud used in building has more grass interwoven than usual. In a few days more, that part of their work will be completed, and the next process will be watched with interest. This is the first instance we know of where birds have taken up their habitation inside a conveyance which is used six days of the week, and their only time for building is a little more than two hours each day."

But of all the queer places for nesting I think a note from Western Australia takes the palm. Mr. Tom Carter, in writing to me, says:—"On my return to hut from shearing-shed I found a nest of the Welcome Swallow built inside on the top of a bunch of pannikins, where they now feed their young, not minding us in the least. The nest is on the top of three pannikins which hang from a nail."

Speaking of Western Australia (in the neighbourhood of North-west Cape), Mr. Carter notes, 7th February (1891):—"The last Welcome Swallow I saw was a week ago." Again he records:—"First Welcome Swallow seen 18th July." Do the birds really return so early! I rather think the individuals seen have never left the district, or else eggs would be found sooner, because migratory birds as a rule commence to breed shortly after arrival, and Mr. Carter has not taken eggs of the Swallow earlier than the middle of September.

It has been observed that a pair of Swallows can build a nest in five days, with an additional three days to feather it. Mr. Carter, writing under date 2nd November, 1895, from Point Cloates (Western Australia), says:—"A pair of Welcome Swallows built their nest in the house verandah while we were over at the shed shearing, but I fear they have forsaken it. The nest is remarkable, as being made mostly of seaweed carried from the beach half-a-mile away, while one would think plenty of suitable material could be procured nearer.

"When last over at the wreck of S.S. 'Perth,' on a reef fully two miles from land, a pair of Swallows was rearing a nest behind the skirting boards of a cabin."

Mr. J. Gabriel reported he had observed a Swallow's nest on the caisson of the dock at Williamstown, 22nd August, 1894; while Mr. Le Souëf found nests on the top and inside the hollows of snags and logs in the Bemm River, East Gippsland, November, 1895.

Although usually peaceably inclined, Swallows sometimes fight. On one occasion Mr. William Morton, Mount Wallace (Victoria), heard a commotion amongst some nest-building Swallows. Subsequently, when the nest was completed, he examined it, and found a bird had been killed and was partially buried in the mud wall of the nest.

379.—*CHERAMECA LEUCOSTERNUM*, Gould.—(57)

BLACK AND WHITE SWALLOW.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 12.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 171.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 115 (1865); Diggles: Companion Gould's Handbook, p. 98 (1877); North: Austn. Mus. Cat., p. 34 (1889), also app., pl. 13, fig. 15 (1890).

Geographical Distribution.—Interior of Queensland (probably), New South Wales, Victoria, South, West, and North-west Australia.

Nest.—A hole about two inches in diameter, drilled into a bank, usually in sandy soil, running horizontally for from one foot to three feet, and expanding into a chamber which is lined with a handful or two of portions of dried grasses and leaves, or, as the case may be, with bits of seaweed and fine wire-like rootlets.

Eggs.—Clutch, four to five, occasionally six; inclined to oval, but sometimes lengthened in form; texture of shell very fine; surface slightly glossy; colour, pure white. Dimensions in inches of a clutch: (1) $\cdot 68 \times \cdot 49$, (2) $\cdot 68 \times \cdot 49$, (3) $\cdot 67 \times \cdot 49$, (4) $\cdot 66 \times \cdot 48$.

Observations.—This is a stationary species, being confined chiefly to the interior and western provinces of the Continent, but it occasionally approaches the sea-board, as in South and West Australia. Gould states the Black and White Swallow is generally seen in small flocks of from ten to twenty in number, sometimes in company with other Swallows. It usually flies very high, a circumstance which renders it difficult to procure specimens. But if it flies high it certainly nests low, for on the authority of Gilbert, Gould states that in Western Australia this bird chooses for its nest the deserted hole of animals, notably the dalgyte (*Peragalea lagotis*), or the boodee (a species of *Bettongia*), but more generally drills holes in the sides of banks. Mr. Johnson Drummond informed Gilbert that he had frequently found seven, eight, or nine eggs in a single nest, from which he inferred that more than one female lays in the same nest. It would seem that the holes are not constructed exclusively for the purpose of nidification, for upon Gilbert inserting a long grass stalk into one of them, five birds made their way out, all of which he succeeded in catching; upon his digging to the extremity, in the hope of procuring their eggs, no nest was found, and hence he concluded that their holes are also used as places of resort for the night.

In Western Australia I noticed small families of this Swallow flying about Geraldton, Champion Bay. The residents informed me that they burrowed in the vicinity not far inland.

During the Calvert Expedition numbers of these pretty Swallows were seen tunneling in the sandy crown of a hill near Cue on June 28th, 1896, whilst others were examining crevices in the rocks. Mr. G. L. Jones climbed to several places from which he saw the birds emerge, but found the nests were unfinished. These Swallows were subsequently seen as the desert was entered, and on September 29th specimens of young birds just able to fly, in addition to adults of both sexes, were noted. A few were soaring overhead at Fitzroy River during January and the two following months. Previously North-west Australia had not been included in the geographical range of this bird.

Mr. North informs us, through the late Mr. K. H. Bennett's MS. notes, that the Black and White Swallow is widely distributed over the timbered or "back" country of the interior of New South Wales, and is generally seen in small flocks of five or six in number, but is never found on the plains. Mr. Bennett's observations practically confirm Gilbert's statement that this interesting Swallow drills holes in the sides of the entrances of the burrows of either the bettongia or peragales, adding, whether the burrows are inhabited or not, and that the breeding month is October.

Again Mr. North writes:—"Mr. Edward Lord Ramsay informs me that during several years' residence on Wattagoona Station, near Louth, in the interior of New South Wales, he found many nests of this species. In favourable situations they breed in small communities, boring a tunnel from eight inches to two feet in length in the loose loamy soil of the bank of a dry creek or dam, at the extremity of which a chamber is hollowed out, and on the bottom a small saucer-shaped nest is formed of a thick layer of dead mulga (*Acacia aneura*) leaves. In a number of nests examined, five eggs were the usual number laid for a sitting; in one instance only did he find a nest containing six."

With regard to the Black and White Swallow breeding near the sea-coast, Mr. John W. Mellor, writing to me from South Australia, states:—"This little Swallow is by no means plentiful near Adelaide. I have only found a pair or two building near one another. They burrow a hole about two or three feet long into the face of a sand cliff, this hole is widened out at the extremity so as to make room for the bird turning in the nest. The nest itself is composed of small portions of seaweed, also fine pieces of grass and thread-like roots of plants that grow in the sandy soil, where the nests are nearly always situated. I have a clutch of five eggs taken from near Lake Alexandrina. It is difficult to procure the eggs, as the hole is too small to insert the hand, and when once the entrance is enlarged the bird of course will forsake the nest and commence burrowing elsewhere. This I experienced in several cases down in the lakes Alexandrina and Albert district this season (1894). The clutch I send you was taken in December from a red sand bank at the Reedbeds, about four miles west of Adelaide."

I have also received eggs of this species taken near Port Lincoln, South Australia.

Breeding season September and the three following months.

380.—PETROCHELIDON NIGRICANS, Vieillot.—(55)

TREE MARTIN.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 14.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 190.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 112 (1865); North: Austn. Mus. Cat., p. 32, pl. 13, fig. 14 (1889).

Geographical Distribution.—Whole of Australia and Tasmania; also New Zealand (casual), New Guinea, New Britain, Aru Islands and Ke Islands.

Nest.—A hollow-spouted limb or hole in an elbow of a tree, which is usually lined with cucalypt leaves. Sometimes the Martin dispossesses other species of Swallows of their nest.

Eggs.—Clutch, three to five; stout oval in shape, or elliptically inclined; texture of shell very fine; surface glossy; colour, pearly-white, but frequently finely speckled with pale-rufous spots. Dimensions in inches of a clutch: (1) $\cdot 7 \times \cdot 51$, (2) $\cdot 7 \times \cdot 5$, (3) $\cdot 7 \times \cdot 5$. (Plate 15.) A beautiful set taken in the Wimmera district are spotted like those of *Hirundo neoxena*.

Observations.—Like the preceding species, the Tree Swallow or Martin is a common visitor in summer to the southern parts of Australia and Tasmania. At the latter place they put in an appearance early in September. I believe I noticed some of them flying high in the Murray district in the middle of July, but whether they were stragglers that remained to winter in that milder part of the mainland, or were advance guards of spring, I could not state with certainty. I rather lean to the first suggestion. However, the numbers noticeably increase in August, when some commence to breed, others during September and October, and probably rear two or more broods before retiring northward again on the approach of autumn to tropical Australia, and even to islands beyond.

When the holes are numerous and convenient, several pairs of birds breed in the same tree. Regarding the Tree Swallow, Mr. John W. Mellor thoughtfully sends the following interesting note from South Australia:—"I have taken eggs from under the little bird. The nest is composed of leaves of the red-gum (*E. rostrata*), placed at the lower end of a hollow limb. Failing to find a suitable hollow limb, I have known the birds to carry leaves and place them on the wall caps under the eaves of sheds or houses. I have also found this little Swallow turn the Welcome Swallow from out its nest, build the nest higher up with mud, so as to make the aperture smaller, and refurnish it with leaves. I have watched Tree Swallows enclosing the mouth of a hollow limb if it is larger than required to admit their bodies. This is probably

done to keep out enemies, the greatest of which here appear to be the imported Sparrow and Starling. These birds squeeze through the small space left by the Swallows and turn out the little occupants."

Mr. Mellor and his uncle, Mr. W. White, encourage these dear little Martins about their houses (Reedbeds, South Australia) by placing portions of hollow limbs against the wall or by the caves, wherein the little birds breed and are quite happy.

On Yorke Peninsula, Mr. James G. McDougall informed me that this Swallow piles grass together in holes in the cliffs, and lays three eggs in a mass of feathers, September to October.

381.—PETROCHELIDON ARIEL, Gould.—(56)

FAIRY MARTIN.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 15.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 199.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 114 (1865); Ramsay: Ibis, p. 299 (1865); North: Austn. Mus. Cat., p. 33 (1889).

Geographical Distribution.—Australia in general and Tasmania.

Nest.—Bottle-shaped; built of mud or clay, and placed singly, but more usually adjoining each other in clusters on the face of a cliff or overhanging rocky river bank, in a cavity of a tree, or on the wall of a building close to the eaves of the roof, under bridges, &c. The necks or entrances have a downward or rather upward tendency, while the inside body is lined with soft grasses and feathers. Sometimes previous nesting places are rebuilt or repaired.

Eggs.—Clutch, four to five; lengthened in form or oval; texture of shell very fine; surface glossy; colour, white, but occasionally faintly freckled, especially about the apex, with light yellowish-brown. Dimensions in inches: (1) $\cdot 7 \times \cdot 48$, (2) $\cdot 7 \times \cdot 48$, (3) $\cdot 7 \times \cdot 48$.

Observations.—Like the Swallow and the Tree Martins, the elegant little Fairy Martin is dispersed over the southern portions of Australia in summer, where it commences to arrive in August, a few reaching the northern parts of Tasmania probably in September. On 12th October, 1893, Dr. W. Macgillivray informed me he first noted their appearance at Launceston. Mr. S. H. Wintle, geologist, was the first observer to direct attention ("Victorian Naturalist," February, 1887) to the fact that the Fairy Martin should be placed on the Tasmanian list of avifauna, because he had found the bird breeding at Bridport, the season of 1883, and other years. The Fairy is more strictly migratory than the two other Swallows above mentioned, for after February or March the birds are rarely seen except in the northern parts of the Continent. During the interval of summer, two

or three broods are reared. In the Gascoyne district, Western Australia, it has been observed that the Fairy Martin appears sometimes about the end of July (21st). A week later I have noticed several pairs flying about their old breeding haunts, Echuca, Victoria. I have received eggs from Cooper's Creek, taken as early as the 4th August, while during a visit to Dubbo, New South Wales, in August, 1887, Mr. North observed these birds arrived in great numbers and commenced to build on the 17th of that month. Further south they commence to lay September and October, and the season may be considered at its zenith during the end of October or the beginning of November.

With regard to the Fairy Martin, Gould states:—"The long, bottle-shaped nest is composed of mud or clay, and like that of the Common Martin (of Europe) is only worked at in the morning and evening, unless the day be wet or lowering. In the construction of the nests these birds appear to work in small companies, six or seven assisting in the formation of each nest, one remaining within and receiving the mud brought by others in their mouths: in shape these nests are nearly round, but vary in size from four to six or seven inches in diameter, the spouts of some being eight or nine inches in length. When built on the side of rocks, or in the hollows of trees, they are placed without any regular order in clusters of thirty or forty together, some of the spouts inclining downwards, others at right angles, &c."

Mr. Harry Barnard's observations in Queensland bear out Gould's remarks that the birds cease working at times, and that a number assist to construct one nest. Sometimes a bird would enter first, and, turning round its pretty little body, would fill up the entrance, while it commenced to build from within.

Here we have Mr. Hermann Lau's descriptive MS. notes:—"Fairy Martin, by some persons called the 'Retort' Swallow, on account of the bird's mud nest resembling such a shaped vessel used in distillery works. The Fairy Martin is a true migrant, but its movements depend greatly on the weather. It arrives in South Queensland (from the north) earlier than at other times. We had a mild winter in 1892, when this welcome little messenger made its appearance at Yandilla on 11th August.

"After rearing several broods they commence leaving at the latter end of February. Soon after arrival nest building goes on with great assiduity. If the weather be hot, only a few hours in the morning are employed at this task, as the mortar or mud which is gathered from a neighbouring lake or river shore gets too dry at noon.

"In about a week the walls are finished, and a neat little edifice it is, but big in proportion to the tiny architect. The soft bed for eggs and young is lined with grass and feathers. The nests are often so crowded together that they overlap one another. The natural site chosen for nest building is either under a projection of rock, wall, or under an excrescence of huge trees, but since the white race of man came to Australia this Swallow, with natural fearlessness, encroaches on more convenient places, namely, verandahs of houses, roofs of wool sheds, bridges, &c. Bridges would be secure enough were it not for

the oft-recurring floods, which sweep away, without mercy, nests, eggs and young. Several times I witnessed this at the Condamine bridge, Yandilla. It seems that the bird's instinct is here at fault."

Referring to the crowded number of nests of the Fairy Martin in some instances, about the end of November, 1860, Dr. Ramsay discovered a large batch under an overhanging rock upon the banks of the Bell River. He counted upwards of one hundred nests, all so closely built together that of many only the entrances were visible.

Of my own casual observations in different localities of the homes of the Fairy-like little Swallow, I have nothing new to add, except the small colonies I found breeding on the face of red cliffs overhanging the Werribee River, near its mouth, not far from the sea, which is at variance from Gould's statement that he had never heard of the Fairy Martin approaching the coast line nearer than twenty miles.

The snugly-built homes of the Fairy Martin are sometimes used by Pardalotes, wherein to rear their young. Those imported articles, Sparrows, also make similar use of them.

In Riverina the Fairy Martin sometimes resorts to hollowed trees to nest. Mr. Thos. Musgrove, a farmer, informed me of a burnt-out tree he knew, overhanging the Murray, where were forty or fifty nests. The group of nests was low, and would have made a pretty picture for a camera.

FAMILY—MOTACILLIDÆ. WAGTAILS AND PIPITS.

382.—*ANTHUS AUSTRALIS*, Vigors and Horsfield.—(240)

GROUND LARK.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 73.

Reference.—Cat. Birds Brit. Mus., vol. x., p. 615.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 392 (1865); Legge: Proc. Roy. Soc., Tasmania, p. 130 (1888); North: Austr. Mus. Cat., p. 158 (1889).

Geographical Distribution.—Whole of Australia and Tasmania.

Nest.—Open or cup-shaped, deep; compactly constructed of dead grass; placed in a hole or depression in the ground so that the rim is flush with the surface, usually under the shelter of a grass tuft or stone, in the open. Sometimes in Tasmania built on the top of what is locally called a "band-grass" tussock. Dimensions: internal $2\frac{1}{2}$ inches across by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three to four; true oval in form; texture of shell fine; surface slightly glossy; colour, varies much, usually greyish or light-drab, minutely freckled and splashed all over, thickest on the apex,

with umber and dull-grey. Dimensions in inches of proper clutches: A (1) $\cdot 95 \times \cdot 65$, (2) $\cdot 92 \times \cdot 64$, (3) $\cdot 91 \times \cdot 63$; B (1) $\cdot 89 \times \cdot 65$, (2) $\cdot 88 \times \cdot 64$, (3) $\cdot 88 \times \cdot 64$, (4) $\cdot 86 \times \cdot 66$. (Plate 15.)

Observations.—The Ground Lark may be described as wearing a plain brownish dress with dark markings on each feather, while the under surface is dull-white, lightest on the throat and abdomen. When flying, two white lateral tail feathers appear conspicuous. Length, $6\frac{1}{2}$ inches; wing, $3\frac{1}{2}$ inches; tail, $2\frac{3}{4}$ inches; bill, $\frac{3}{4}$ inch; tarsus, 1 inch. Both sexes are alike in colouring, but newly-moulted individuals have a richer shade of brown in the coat.

Throughout Australia, Tasmania, and even adjacent islands, wherever there are grassy or meadow-like situations, there the familiar Ground Lark, or Pipit, is sure to be seen, flitting over the field before you. Its own native song is beautiful and blithesome, especially at times in the morning sun, when the bird is seen poised on wavering wings pouring out its notes over some field.*

My friend, Mr. Tom Court, graphically related to me an incident of how he was once shooting on the plains, and came suddenly upon a tiger snake with its head a few inches from a Ground Lark sitting upon her eggs.

Referring to the Ground Lark singing, Mr. C. McLennan, writing to me from the Mallee Scrub, under date 9th September, 1896, says:—“But last Sunday when I was going through a paddock I saw a Ground Lark and took particular notice of it. All at once the bird seemed to know what I wanted, for it rose up in the air, singing all the time that it was ascending, but stopped as soon as it started to come down again. I have seen the bird go through the performance once since.”

The Ground Larks from Tasmania and islands in Bass Strait are larger than the mainland bird, so much so that they may almost be considered a local variety, the eggs, too, being larger.

Breeding months end of August to January or February, during which time two or more broods are reared.

A plate in the “Records” of the Australian Museum (vol. iii) depicts a most curious nesting place for a Ground Lark—a rusty (probably preserved milk) tin with the ragged lid open and still attached. The tin was found lying in an exposed situation in a paddock at Campbellton, New South Wales. There was a pair of eggs in the nest.

*Those persons who take interest in “Land Birds at Sea” may like to know that during a recent passage of the R.M.S. “Victoria” to Sydney, a Ground Lark came on board off Ninety-Mile Beach, Gippsland—at least, that is where it was first observed. The bird remained with us till we reached Port Jackson. I noticed it take several short flights round the big vessel, and saw it picking up food—crumbs, apparently—on board. I believe, at night, it roosted in one of the boats.

FAMILY—ARTAMIDÆ: WOOD SWALLOWS.

383.—ARTAMUS LEUCOGASTER, Valenciennes.—(80)

WHITE-RUMPED WOOD SWALLOW.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 33.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 3.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 155 (1865); Hume: Nests and Eggs Indian Birds (1875), Oates' ed., vol. i., p. 353 (1890); North: Austr. Mus. Cat., p. 43 (1889).

Geographical Distribution.—Whole of Australia (except perhaps West); also New Guinea, Moluccas, Celebes, Timor, Flores, &c., Philippine Islands, Borneo, Java, Sumatra, and Andaman Islands.

Nest.—Open: well constructed generally of coarse yellowish grasses, sometimes mixed with other material, such as casuarina needles, lined with finer grass, and usually placed within an old deserted nest of the Magpie Lark (*Grallina picata*), but not unfrequently situated in the mouth of a hollow spouted limb—rarely in the naked fork of a tree. Dimensions over all (including the outer mud nest, if used): 4 or $4\frac{1}{2}$ inches by $1\frac{3}{4}$ inches in depth: egg cavity, $2\frac{3}{4}$ inches by $1\frac{1}{2}$ inches deep.

Eggs.—Clutch, three to four, usually four; somewhat pyriform or pointed oval in shape; texture of shell fine; surface without gloss; colour, delicate, warm or pinkish-white, softly blotched, chiefly around the upper quarter, with light-brown or chestnut, purplish-brown and slate. When fresh or unblown the eggs are exceedingly beautiful for their pinkish blush. Dimensions in inches of a clutch: (1) $\cdot96 \times \cdot7$, (2) $\cdot96 \times \cdot7$, (3) $\cdot95 \times \cdot7$. (Plate 15.)

Observations.—This is a very beautiful Wood Swallow, and is probably the most widely spread species of our *Artami*, having been recorded for every locality on the Continent where there has been a collector, except South-western Australia. It also ranges throughout Austro-Malayan regions.

It is a very fascinating bird, of chubby appearance, with tips of the swallow-like wings extending beyond the tail when the bird is in a state of repose. Its pure white chest, all the under parts, and rump, look very clean and conspicuous compared with the dark grey colour of the rest of the plumage.

The White-rumped Wood Swallow remains in some parts of tropical Queensland during the winter time. In June, Mr. K. Broadbent has noticed it in Cardwell flying in and out of the tea-tree (*Melaleuca*) in quest of insect prey that were feeding among the blossoms of those trees. In August they move southward. Some reach Victoria in September

or October, and after rearing a brood or two return again about March or the beginning of April. The last individuals I heard or saw in the Murray district one season were on the 11th April (1892). Another season I noticed several of these birds (evidently first arrivals) at Bannockburn, Riverina, on the 17th September, 1894.

Mr. Lau, in his manuscript notes, says there is a third kind of Wood Swallow found on the Darling Downs, and from his description—"plump in figure, black and white in colour."—it is, I have no doubt, referable to the White-rumped Wood Swallow. They appear in August there. He had often seen and shot them on the boundary of New South Wales and Queensland, and was acquainted with their peculiar habit of flying together and sometimes forming themselves into a cluster of at least fifty birds, like a swarm of bees.

The novel sight, Mr. Lau says, is wonderful to behold, and is usually high up in a tree. This bunching performance has also been recorded for the common Wood Swallow and the Black-faced variety. But why they do it has not yet been explained satisfactorily.

Two nests taken by Gilbert on a small island in Coral Bay, Northern Territory, were compactly formed of wiry grass and portions of the fine plants growing on the beach; they were placed in a fork of a slender mangrove within fifteen feet of the water, in which the tree was growing.

Mr. K. Broadbent observed the White-rumped Wood Swallow breeding in August (1887 or 1888), in a large eucalyptus overhanging the upper Fitzroy River, Queensland.

The White-rumped Wood Swallows Gould found breeding on the Mokai, New South Wales, had possessed themselves of the forsaken nest of the *Grallina picata* or Magpie Lark, which the Wood Swallow had rendered warm and of proper size by lining it with grasses, fibrous roots, &c. Gould's statement has since been verified by other field observers; and in the season of 1892, in the Murray district, Mr. Gabriel and myself enjoyed the opportunity of making ourselves personally acquainted with several examples "of a nest within a nest." The birds were generally observed near a river or a swamp, either situation being of course favourable for Grallinas' nests. The first Wood Swallow's nest was discovered on the 5th November. (See illustration.) It was neatly built into the Grallina's old nest and contained three eggs, their delicate mottled appearance being rendered most beautiful by the roseate blush caused by the reflection from the yolk within. However, the blush quickly departs when the eggs are blown. The tree containing the nest was a small red gum, standing in a lagoon. It was a lively tree, for it also contained another Grallina's nest with that bird's own young, and a Black and White Fantail's home with a triplet of fresh eggs. On the 7th November we found another Wood Swallow's nest with young ones, again in a Grallina's nest, situated in a low tree. A third nest was taken on the 12th from a similar place in a solitary red gum-tree that stood back some distance from the river. In this instance it contained a full complement of four eggs. Other White-rumped Wood Swallows' nests were observed the same week, either building or with young; but all, without exception, in the usual roomy and comfortable receptacle—a Grallina's old home.



WHITE-RUMPED WOOD SWALLOW'S NEST IN MAGPIE
LARK'S OLD NEST.

From a Photo by the Author



NEST OF THE BROWN HONEY EATER.

From a Photo by the Author.

I have a pleasant recollection of a family of these Wood Swallows which I saw in the Big Scrub of New South Wales. I was out one morning early near the mouth of the Brunswick River, where was a brood of three young perched on a branch overhanging the stream. How attentive were the parent birds, every moment diving gracefully down and hawking along the river's bank for food, each time returning with a captured insect and transferring it to the extended gape of one or other of the youngsters as they sat closely side by side on a naked twig!

Frequently, fledged young from different clutches have the habit of congregating. As many as fifteen or sixteen, about the same age, may be seen perched side by side on a dead branch with the old birds in flying attendance.

Mr. Thos. R. McDougall, while camped at the Black Ridge, near Clermont, Queensland, thoughtfully sent me the following note *re* the White-rumped Wood Swallow. He says: "I noticed a pair this morning (30th October, 1895), building a nest in the end of a hollow limb, about sixty or seventy feet from the ground. When I saw a hollow limb I may mislead you, but as well as I could tell it was a shallow hole where the limb had been snapped off by the wind some considerable time ago."

Professor Moseley, in his "Notes by a Naturalist," when at Cape York, September, 1874, shot several of these graceful Wood Swallows, which had the bases of their bills clogged with pollen from the flowers on which no doubt they had been searching for insects. The professor suggests they must be like some Humming Birds which act as fertilizers, carrying pollen from one flower to another.

The breeding season of the White-rumped Wood Swallow may be said to commence in August or September and continue to the end of the year. A pair was noticed feeding young near the Fitzroy River (North-west), about the middle of February.

384.—ARTAMUS SUPERCILIOSUS, Gould.—(79)

WHITE-BROWED WOOD SWALLOW.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 32.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 15.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 153 (1865); North: Austr. Mus. Cat., p. 48 (1889).

Geographical Distribution.—Queensland, New South Wales, Victoria and South and West Australia.

Nest.—Open, somewhat frail and shallow; constructed of fine twigs or dark, dead flowering stalks of plants, &c., lined with very fine rootlets, sometimes with grass, yellowish in colour compared with the outside material, and situated, as if at random, anywhere on bush or tree, but usually in a forked branch or on a projecting piece of bark or fractured limb. Occasionally placed in a deserted nest of a Magpie Lark

(*Grallina*). Dimensions over all, $3\frac{3}{4}$ to $4\frac{1}{4}$ inches by 2 in depth; egg cavity, $2\frac{3}{4}$ inches across by 1 inch deep.

Eggs.—Clutch, two to three, rarely four; somewhat pyriform or stout oval in shape; texture of shell fine; surface glossy; colour, light greenish-grey, in some instances buffy-white, mottled and clouded, chiefly on or around the upper quarter, with umber and slate. Dimensions in inches of a proper clutch: (1) $.93 \times .69$, (2) $.91 \times .67$, (3) $.9 \times .7$. (Plate 15.)

Observations.—This handsome bird may be generally described as dark-grey above, under parts rich dark chestnut, the dark-coloured head being enhanced with a white stripe over either eye, hence the vernacular name. The female is easily distinguished by her paler colours. In both the eyes are dark, or nearly black, bill light-blue at base, black at tip, and feet leaden colour. Total length, 7 inches.

As Gould correctly surmised, this Wood Swallow is naturally a denizen of the great interior; but it wanders, or is partly migratory, according to the seasons. Protracted droughts may cause the birds to move in flocks towards the sea-board, or perchance there may be a caterpillar or locust plague in the south, when these most useful birds follow in the wake of the destructive insect hordes. This has been frequently observed.

The most southern limit of the White-browed Wood Swallows is Victoria, where they have often been found breeding on the timbered shores of Port Phillip. However, they visit Victoria at irregular intervals. It would indeed have been an interesting record had some enthusiastic field observer kept data of the visits of these fine birds to their most southern limit, and also ascertained at the same time the climatic conditions prevailing in the far interior. It may not be too late to commence now.

I attach no small blame to myself that my notes on the subject are somewhat few and scattered. About 1860 is my earliest recollection when the birds were in immense flocks about the timber belts of the Weribee plains. In 1865 (which was the record year for small rainfall in Victoria—15.94 inches), there were swarms of these birds about the parks in the vicinity of Melbourne.

Mr. Wm. Clayton tells me they appeared in myriads in the Moorabbin district in 1868. Another visitation occurred in 1870. There are three other records at intervals of two years, when I found nests at Brighton in 1888 (third place for low rainfall—19.42 inches), and in the Lake Charm district in 1890 and 1892; but I could not state in either these last two instances whether the birds came south of the Dividing Range.

During the season 1892, I observed in the Benjeroop district, near the Murray, that most of the birds commenced to build about the end of the first week in November; while I noticed some nests with eggs on the 10th of the same month. I particularly remember one nest, prettily situated in the fork of a fallen bleached dead branch. When I returned a day or two afterwards to take a photographic picture, lo! it was not there. I happened to be in the Murray district again at the

end of that season, which was the following March (1893), when I noticed the Wood Swallows about. On the 19th the familiar chirping voices could be heard from the birds circling on high. Sometimes they fly so high that in the full flood of sunlight it is difficult to detect the birds themselves. After the 6th April I neither saw nor heard any more that season.

On Dec. 12th, 1894, I thought I heard the voices of the White-browed Wood Swallow flying high over Arncliffe: my ears did not deceive me, for my young and enthusiastic friend, Mr. J. Sommers, obtained a few skins near Cheltenham during Christmastide. However, the following year (1895), a great irruption of birds occurred in Victoria, and they were breeding plentifully in the vicinity of Melbourne—in such places as the Horticultural Gardens (Burnley), the Royal Park, &c., in fact they were seen nesting in the trees about the streets and gardens of Toorak, Camberwell, and other suburban places. No doubt these highly interesting birds were driven down by the exceptionally dry season of the interior. The year 1895 was the second lowest record for rainfall (17.06 inches), the average for the State of Victoria for the past thirty-nine years being 25.87 inches.

The first of these Wood Swallows appeared in Victoria during September. Dr. Macgillivray observed them at Elmore, in the Bendigo district, on the 25th of that month. My son reported he had seen a flock of about fifty birds at the Horticultural Gardens, 7th October. They remained a few days and were off again; while Mr. C. C. Brittlebank writes in October, "A flock of White-browed Wood Swallows, with a few Masked (*A. personatus*) birds, rested here for a couple of days."

Some of the flocks made their way far into the wooded tracts of Eastern Gippsland, where they were seen by Mr. D. Le Souëf in November.

Mr. C. C. Brittlebank, again writing from Myrning, 16th April, 1896, says:—"The other morning I was up long before daylight, when a large flock of birds passed over, taking quite fifteen or twenty minutes to do so. Their call was exactly like the White-browed Wood Swallow. They were travelling N. by N.E."

In 1897 (the third year in succession for great numbers) they were first noted at Burnley, 6th September. They commenced to breed at Cheltenham in the middle of November; at the end of January, near Camberwell, I saw them feeding their young with grasshoppers. The Wood Swallows appeared again in 1898 and 1899.

It was indeed a surprise to ornithologists to see crowds of these fine birds in Victoria in five successive seasons; but if we remember the disastrous drought then existing in the interior generally (practically for seven years in the Cooper's Creek district), the interesting visits of the birds are accounted for. One season (1898) White-browed Wood Swallows appeared in Victoria unusually early. They were noticed at Pine Plains with their Masked brethren at the end of August.

In Mr. Lau's MS. we find:—" *Artamus superciliosus*.—This fine Wood Swallow—the handsomest of that family—visits the southern part of Queensland. Found in the sandy districts, arriving from the

north with two other namesakes (*A. sordidus* and probably *A. leucogaster*) in September, retiring again the beginning of March. Plants its nest, a poor structure (little grass and rootlets), on the ledge of the loose eucalypt bark, at a height of from ten to twenty feet."

A Coomoooolaroo (Queensland) note, which I mentioned in the "Australasian," in 1886, states an instance of the interbreeding of this species with the *A. personatus*—a male of the White-browed species being mated to a female of the Masked Wood Swallow. Albino eggs of the White-browed species have been taken on the same station. My son also took a pair of such eggs in Victoria.

From a correspondent, then (1889) at Cooper's Creek, I received eggs of the White-browed Wood Swallow taken as early as the 4th August. Therefore we may say that the laying months begin in August and terminate in December, the earlier months of course applying to its interior habitat.

The call of the White-browed Wood Swallow is a plaintive whistle-like note, generally uttered when on the wing. The alarm note seems to sound like "whamp." There are other notes sounding like "tut-tut-tut" rapidly repeated.

385.—*ARTAMUS PERSONATUS*, Gould.—(78)

MASKED WOOD SWALLOW.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 31.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 16.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 151 (1865); North: Austr. Mus. Cat., p. 44 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South. West, and North-west Australia.

Nest.—In general similar to that of *A. superciliosus*; composed of dead branching twigs as a foundation, then green portions of shrubs, finally a goodly lining of fine rootlets, dry grass, and chiefly a green wiry grass, and situated in a bush or low branch of a tree from 1½ feet to 8 or 10 feet above the ground. Dimensions over all, 4½ inches by 3½ inches in depth; egg cavity, 2½ inches across by 1½ inches deep.

Eggs.—Clutch, two to three; stout oval in shape or sharply pointed at one end; texture of shell fine; surface glossy; colour, light greenish-grey, mottled and clouded, chiefly around the upper quarter, with amber and dull-grey, resembling exactly those of the *A. superciliosus*. Dimensions in inches of a clutch: (1) .88 × .66, (2) .88 × .66, (3) .8 × .67.

Observations.—This handsome Wood Swallow and the *A. superciliosus* are probably more nearly related than any other two of the *Artami*.



NEST OF THE MASKED WOOD SWALLOW.

From a Photo by the Author.



The fact already recorded by me of the female *A. personatus* being mated to a male *A. superciliosus*, would tend to prove that assertion, besides, oologically speaking, the eggs are inseparable as far as outward appearances go. The voices of the two species are very much alike, but the "whamp"-like alarm note of *A. personatus* is somewhat coarser and deeper.

It is called Masked on account of its face, including the ear coverts and throat, being black. The rest of its elegant figure is grey, lighter and most delicately coloured on the under parts; bill, bluish; eyes, dark-brown. The hen bird is paler in general colour, while the young have the dark plumage brownish mottled, as in the young of the various other species.

The geographical range of the Masked Wood Swallow likewise is almost identical with the White-browed bird. I have noted, when we have had visitations in Victoria of the latter species, there were always intermingled a few odd pairs of the Masked variety, which seemingly accompany the greater numbers of the White-browed Wood Swallow on their peregrinations. When it visits Victoria it commences to breed in November.

Gould supposed the Masked Wood Swallow to be the beautiful western analogue of the White-browed variety, and referring to the bird in Western Australia, quotes Gilbert:—"I have only met with this species in the York and Toodgay districts. It is merely a summer visitant here, generally making its appearance in the latter part of October, and immediately commencing the task of incubation.

"Its nest is placed in the upright fork of a dead tree, or in the hollow part of the stump of a grass-tree; it is neither so well nor so neatly formed as those of the other species of the group, being a frail structure, externally composed of a very few extremely small twigs, above which is a layer of fine dried grasses. I found two nests in a York-gum forest, about five miles to the east of the Avon River; each of these contained two eggs."

These finds of Gilbert's are the first recorded nests of this exceedingly fine and conspicuous Wood Swallow.

While mentioning the western habitat of this fine Wood Swallow let me give Mr. G. A. Keartland's field notes, taken during the Calvert Expedition:—"Early in August we passed through an immense flock of these birds in a mulga scrub. They appeared to be migrating, and to have simply stopped to satisfy the cravings of hunger, as they were soon busy amongst the grasshoppers. We camped for lunch, but, before we resumed our journey, they had made a start. On several subsequent occasions they were noted, and near our camel depot on August 25th they were found in company with *A. melanops* and *A. superciliosus*. As we approached the northern border of the desert we saw numerous flocks, whose welcome chirp was the only sound that disturbed the silence of the journey."

My first find of the nest of this species was, I think, in the season 1870, when I took one in the Malvern district, near Melbourne. Twenty years afterwards, on the 1st day of December, I took another

containing a pair of fresh eggs, in the Murray district, near Benjeroop. The nest was slightly concave, somewhat frail, and composed of dead flowering stalks of a certain plant and a few twigs, and lined with grass. Not far distant was a nest of its White-browed cousin (*A. superciliosus*) made of similar material.

I quote the following from remarks kindly furnished me by Mr. James McDougall, Yorke Peninsula, South Australia:—" *Artamus personatus*.—The Masked Wood Swallow appeared in numbers in September, 1885, and nested the following month, the nest being indistinguishable from those of the common Wood Swallow (*A. sordidus*). The males were very few in proportion to the number of females. Absent 1886 and 1887."

I stated in a previous part of my observations on this Wood Swallow that odd pairs accompanied the White-browed birds on their visits southward. But the year 1895 was a most remarkable exception, when flocks of the Masked species appeared independently in Victoria. The early flocks arrived in the first week in November, or a month after the first of the White-browed birds. My son reported he had seen flocks in the vicinity of Springvale, near the Gippsland railway line. To verify his statement Mr. Gillespie and I repaired thither on the afternoon of the 30th November. We had no sooner left the station than a flock of mostly Masked Wood Swallows rose from some low scrub, where we took two or three nests. (See illustration of one.) We then proceeded through the timber where more of the Masked birds were distributed, with an occasional pair of the White-browed variety. In taking the eggs we were very careful to discriminate between the two species, always waiting for the owners to return and claim their nests.

In addition to three nests of the White-browed Wood Swallow, the following is my record for the Masked variety that afternoon:—

	SITUATION.	Height from ground.	IDENTIFICATION.	No. of Eggs.
1	In <i>Leptospermum</i> Bush	1½ feet	Bird came back . . .	3
2	In Gum Sapling . . .	5 "	Saw bird leave nest	1
3	Dead <i>Leptos.</i> Bush ..	4 "	Bird identified . . .	3
4	Gum Sapling	6 "	" "	2
5	Fork of Gum Bough	6 "	Bird close to nest ..	1
6	Small Gum Sapling ..	4 "	Bird identified . . .	2
7	Small <i>Leptospermum</i>	4 "	Saw bird leave nest	3
8	" "	3 "	Bird identified . . .	3
9	Fork of Small Gum	8 "	" "	2
10	Fork of Dead <i>Leptos.</i>	2 "	" "	2
11	Fork of Small Gum ..	7 "	" "	1
12	Small Gum Sapling ..	4 "	" "	2
			Total..	25

The majority of the eggs were quite fresh. My companion found a similar number of nests. We hunted for about three hours and were never out of the one paddock, which contained many acres, and was

fairly clothed or timbered with small gums, saplings and under scrub. We observed that the nests of the Masked Wood Swallow were invariably lined with *green* grass, while those of the White-browed had *dead* grass.

The third season in succession (or 1897) these birds appeared in Victoria with their White-browed brethren. The first flock in the vicinity of Melbourne was noted by my son at Burnley, 29th October. These birds reappeared in 1898, and again in 1899.*

Breeding season, in the south, October, November and December.

386.—ARTAMUS CINEREUS, Vieillot.—(75)

GREY-BREASTED WOOD SWALLOW.

Figure.—Gould: Birds of Australia, fol., vol. II., pl. 29.

Reference.—Cat. Birds Brit. Mus., vol. XIII., p. 16.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. I., p. 148 (1865).

Geographical Distribution.—Northern Territory, Queensland (?), South, West, and North-west Australia.

Nest.—Round; compact, in some instances constructed of fibrous roots; lined with fine hair-like grasses; in others of the stems of grasses and small plants; it is built either in a scrubby bush or among the grass-like leaves of the *Xanthorrhœa*, and is deeper and more cup-shaped than those of the other members of the group. (Gould.)

Eggs.—Clutch, three to four; stout oval in form; texture of shell fine; surface slightly glossy; colour, warm or pinkish-white, boldly blotched with umber, reddish-brown and dull-slate. Dimensions in inches of odd examples: (1) $\cdot97 \times \cdot7$, (2) $\cdot85 \times \cdot65$; of a full clutch of roundish examples: (1) $\cdot88 \times \cdot69$, (2) $\cdot87 \times \cdot7$, (3) $\cdot85 \times \cdot7$, (4) $\cdot85 \times \cdot69$.

Observations.—This bird is the largest Australian Wood Swallow, and is a western and northern species.

Mr. Kendall Broadbent, if he be correct in his diagnosis of the species, and not confounding it with *A. melanops*, found it nesting at Charleville (Central Queensland). One nest was in a currajong and another in a small pine. Again Mr. Broadbent reported he had found a nest of the Grey-breasted Wood Swallow at Springsure (Queensland), October (1887 or 1888), and nests with young at Barcardine in November. Mr. Broadbent noticed that there this Swallow builds its

*As I mentioned in connection with the White-browed Wood Swallow, the visit to Victoria for five successive seasons is "a record," obviously caused by the disastrous drought existing (for seven years at Cooper's Creek) in the great interior.

nest preferably on bottle-trees and on the tops of broken-off stumps near watercourses.

Gilbert's information from West Australia was that the bird breeds there in October and November, and it is a very local but by no means uncommon species, particularly in the Swan River district. I am inclined to venture the opinion that this bird at times wanders northward or towards the interior, according to the seasons. I had favourable opportunities, both as regards time and locality, of observing them in Western Australia during the season of 1889, and failed to detect a single bird.

The eggs I obtained were from a number that were in the Mechanics' Institute and Museum, Perth.

Dr. Sharpe has created a new species, *A. venustus*; habitat, North-western Australia, which Dr. Ramsay thinks is identical with *A. cinereus*. Further research can only prove which authority is correct. Mr. G. A. Keartland received eggs from the Fitzroy River taken during the month of February.

387.—*ARTAMUS HYPOLEUCUS*, Sharpe.—(76)
A. albiventris, Gould.

WHITE-BELLIED WOOD SWALLOW.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 30.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 17.

Previous Descriptions of Eggs.—Campbell: Victorian Naturalist (1886); North: Austr. Mus. Cat., p. 45 (1889).

Geographical Distribution.—Northern Territory, Queensland, and interiors of New South Wales (probably) and South Australia.

Nest.—The usual open, somewhat flat structure; composed of fine twigs and grasses, and situated in any convenient position on a tree.

Eggs.—Clutch, four usually; round oval in shape, but some examples are more pointed at one end; texture of shell fine; surface glossy; colour, buffy-white, somewhat boldly blotched all over with amber or purplish-brown and dull-grey. Dimensions in inches of a proper clutch: (1) $\cdot 86 \times \cdot 69$, (2) $\cdot 86 \times \cdot 68$, (3) $\cdot 85 \times \cdot 68$, (4) $\cdot 84 \times \cdot 69$.

Observations.—From the little knowledge we possess of the White-bellied or White-vented Wood Swallow I think we may infer it is a frequenter of the interior and north-eastern portions of Australia, and that it is a stationary species, as the Messrs. Barnard have proved in Queensland, where the principal breeding months are from August to December.

388.—*ARTAMUS MELANOPS*, Gould.—(77)

BLACK-FACED WOOD SWALLOW.

Figure.—Gould: Birds of Australia, fol., supp., pl. 7.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 17.

Previous Descriptions of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. ii., 2nd ser., p. 405 (1887); also Austr. Mus. Cat., pl. 8, fig. 13 (1889); Le Souef: Victorian Naturalist, vol. xvi., p. 69 (1899).

Geographical Distribution.—Interior of Australia in general, except Victoria.

Nest.—A round, open structure; composed of fibrous roots; lined inside with grasses, and placed in a low bush (North).

Eggs.—Clutch, three to four; oval in shape; texture of shell fine; surface glossy; colour, buffy or pinkish-white, fairly blotched and spotted all over with reddish-brown and dull-purple. Dimensions in inches of odd examples: (1) $\cdot 88 \times \cdot 64$, (2) $\cdot 87 \times \cdot 62$; of a proper clutch: (1) $\cdot 9 \times \cdot 66$, (2) $\cdot 9 \times \cdot 65$, (3) $\cdot 89 \times \cdot 64$. Mostly resemble those of *A. cinereus*, but are sometimes redder in colouration.

Observations.—Here again "Doctors differ." Dr. Ramsay says: "After a careful examination of over fifty specimens from all parts of Australia, I can find no valid reason for separating these birds (*A. cinereus* and *A. melanops*);" while Dr. Sharpe holds that *A. melanops* is a good species, and that it is "similar to *A. cinereus*, but smaller; face with a greater amount of black on the sides, and the under tail coverts narrowly tipped with white."

The breeding months may be included from September to January, according to the season.

389.—*ARTAMUS SORDIDUS*, Latham.—(73)

WOOD SWALLOW.

Figure.—Gould: Birds of Australia, fol., vol. ii., pl. 27.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 19.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 145 (1865); North: Austr. Mus. Cat., p. 42, pl. 8, fig. 14 (1889).

Geographical Distribution.—Australia (except perhaps north), and Tasmania, including islands in Bass Strait.

Nest.—Open, shallow; constructed of fine twigs and grass; lined with wire-like rootlets (occasionally a nest is wholly made of rootlets), and placed in any convenient situation, from a few feet to twenty feet from the ground, in a thick bush or naked forked limb of a tree, a niche of bark on the side of a tree bole, or on a stump. Dimensions over all, 4 to 5 inches by $2\frac{1}{2}$ inches in depth; egg cavity, $2\frac{1}{2}$ inches across by $1\frac{3}{4}$ inches deep.

Eggs.—Clutch, three, occasionally four; somewhat oval in shape; texture of shell fine; surface slightly glossy; colour, yellowish or dull-white, blotched and spotted, chiefly in the form of a ring round the upper quarter, with umber and dull-grey. Dimensions in inches of a clutch: (1) $\cdot9 \times \cdot65$, (2) $\cdot9 \times \cdot65$, (3) $\cdot87 \times \cdot64$. (Plate 15.)

Observations.—The Wood Swallow's form is dusky grey, wings and tail bluish-black, external edges of the wings white, tail also tipped with white, bill bluish, tipped with black, and eyes dark-brown; total length, 7 inches; wing, 5 inches; tail, 3 inches; and bill, $\frac{7}{8}$ inch.

It is a disputed point whether our familiar sombre-coloured Wood Swallow is really migratory or not. Gould states it may be regarded as a strictly migratory species in Tasmania. I always believed it was a stationary species. It certainly appears to be so on the mainland, in the southern parts as well as in Queensland, where, according to Dr. Ramsay, the bird does not range further north than the Rockingham Bay district. Gould proceeds to observe that in size and colouring he found no difference in the eastern and western birds, while those from Tasmania were invariably larger in all their measurements, and also of a deeper colour, facts which I think tend to prove that they are an insular variety, and do not all leave Tasmania in the winter, as is supposed by some collectors. During winter, no doubt, many of these birds retire inland from the sea-board. In the month of June (1895), along the creeks in Riverina, I noticed small families of the Wood Swallows, and occasionally a flock of a score or more: a sufficient proof that they are not strictly migratory, or else they would not have been so far south during winter. Near the coast the Wood Swallows have been observed returning early in September. (J. Sommers, 8th September, 1895, Cheltenham.)

Mr. C. C. Brittlebank, writing from Myrning, 16th April (1896), says:—"The Wood Swallows are still with us. Sometimes they stay all the winter." Another time he writes:—"18th May (1897). Flight of Sordid Wood Swallows passed over." In 1898 a correspondent in the Mallee, Victoria, wrote:—"The Common Wood Swallows have been here all the year."

Writing under the *nom-de-plume*, "Nemo," to "The Australasian" (2nd November, 1895), on the movements of the Wood Swallow, an observing naturalist, living near the coast (at Inverloch, Victoria), states:—"Referring to your very interesting notes on birds of Australia, by Mr. Campbell, there is apparently a doubt amongst naturalists as to whether the Wood Swallow is a migrant or not. I have taken

notes of the arrival and departure of this and many other birds from this part of the State during a period extending over many years, and I am of the opinion that the Wood Swallows are regular summer migrants to South Victoria. The following are the dates of arrival and departure during the last seven years:—

	ARRIVAL.	DEPARTURE.
1889.	August 26th... ..	End of April
1890.	August 28th... ..	End of April
1891.	August 30th... ..	Middle of May
1892.	September 5th	End of April
1893.	August 19th... ..	End of April
1894.	August 22nd	End of April
1895.	September 9th

"It will thus be seen that they return to us with great regularity. Towards the end of summer I often see immense flocks of the common sort, *Artamus sordidus*, flying at a great height, and uttering an almost continuous cry, very different to their usual call. The Masked, or White-browed varieties do not associate with the others. I occasionally see families of those varieties occupying particular spots. The Wood Swallows have a curious habit of occasionally roosting together in flocks. At such times they select any overhanging burnt out tree or get under a sheet of overhanging bark and arrange themselves like a swarm of bees. They only collect together in such a manner at certain periods. I have taken their nests out of hollow stumps and green bushes. They are not particular where they build so long as the position is sheltered."

Mr. S. W. Jackson, Clarence River (New South Wales), writes:—"With regard to the Wood Swallow (*Artamus sordidus*), these birds arrived here on August 1st last year (1895); other years earlier.

"While returning home the other day on my bicycle, after doing a day's nesting, I found a nest of *Artamus sordidus* built in an upright fork of a spotted eucalyptus. I climbed the tree, and the nest contained three fresh eggs. These birds leave the district again in February, sometimes January, therefore they remain here six to seven months, from August to February."

Apparently some Wood Swallows when building are fastidious if watched too closely by an observer. A pair which our field naturalist, Mr. Robert Hall, must have had designs upon, transferred their nest three times, then fourth and finally removed it back to its original site before the eggs were laid.

Mr. Hermann Lau's Queensland note on the common Wood Swallow is:—"More plainly dressed than the White-browed Swallow, and is by far more distributed over the whole of the Darling Downs, in the black and sandy localities alike, and remains through the winter. Never found the nest of this species on the black soil, but frequently on the sandy soil in the neighbourhood of Pike's Creek. It builds in a eucalypt sapling clump, about eight feet from the ground. November, 1873."

The breeding season includes the months from September to January.

The Wood Swallows have been charged with killing bees, and no doubt they do, as they are by nature insectivorous, but think of the number of noxious and destructive insects they kill as well. Lumlholtz and other observers state that the Common Wood Swallow has been seen feeding the young of the Koel.

I was once privileged to observe the peculiar habit first mentioned by Gould of the Wood Swallows hanging together in clusters. It was during one autumn, on the Upper Yarra track, when numbers of the birds congregated at evening, bunching about the hollow spouts of lofty trees.

Regarding this extraordinary clustering habit, Messrs. William and Frank Brown, of Kent Group, who have paid particular attention to the birds of their islands, described to me how the Wood Swallows clustered in hundreds during certain seasons, especially if cold. Sometimes they formed a bunch near the ground, hanging on to each other, but always head uppermost, at other times higher in a tree. Where they have been hanging, occasionally a few dead ones have been found underneath, probably having succumbed to cold or suffocation. It is presumed the birds huddle together for warmth, because these curious congregations, about two armfuls round, were usually observed during cold or rainy weather. When suddenly dispersed by fright, &c., the simultaneous noise created by the multitude of wings has been compared to a mild clap of thunder.

Some of the birds, on being handled, leave the taint of an abominable odour—compared to that of decomposing meat—on one's fingers.

390.—ARTAMUS MINOR, Vieillot.—(74)

LITTLE WOOD SWALLOW.

Figure.—Gould : Birds of Australia, fol., vol. ii., pl. 28.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 20.

Previous Descriptions of Eggs.—Ramsay. Proc. Linn. Soc., N.S. Wales, vol. vii., p. 407, pl. 3, figs. 9-10 (1882); Campbell: Southern Science Record (1883).

Geographical Distribution.—Australia, except South and Victoria.

Nest.—The usual open, slightly-built structure; placed in any convenient position, on stump or tree, often in the entrance of a hollow spouted branch.

Eggs.—Clutch, three; stout oval in shape; texture of shell fine; surface glossy; colour, yellowish-white, blotched and spotted, chiefly on or around the upper quarter, with umber and dull-grey. Dimensions in inches of a pair: (1) $\cdot 7 \times \cdot 55$, (2) $\cdot 7 \times \cdot 54$.

Observations.—This is the smallest of the elegant family of Wood Swallows, and in appearance resembles the Dusky-coloured Wood Swallow (*A. sordidus*) in miniature. It is a permanent or stationary species in Queensland and the northern parts of Australia generally.

In August (1885) I noticed them in the Cardwell district, where Mr. K. Broadbent says he found them plentiful during the months of June and July.

However, some wander down to New South Wales, where the species was found by Gould on the Lower Namoi, and where he states the birds had evidently been breeding, because he observed numerous young ones, whose primaries were not sufficiently developed to admit of their flying any great distance; besides they were constantly being attended by their parents, who were hawking about in the air over and among the trees, notably myalls (*Acacia pendula*), while the young were quietly perched close to each other on a dead twig, as is the fashion of most young Wood Swallows.

Now we take leave of the showy and beautifully-formed Wood Swallows, which, being insectivorous, are most useful to man, and as Gould truly says must perform a most important part in checking an overdue increase of injurious insects.

FAMILY—STURNIDÆ: STARLINGS.

SUB-FAMILY—STURNINÆ.

391.—*CALORNIS METALLICA*, Temminck.—(291)

SHINING STARLING.

Figure.—Gould: Birds of Australia, fol., supp., pl. 33.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 138.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 478 (1865), also fol., supp. (1869); Ramsay: Proc. Zool. Soc., p. 594 (1875); North: Proc. Linn. Soc., N.S. Wales, vol. ii., 2nd ser., p. 443 (1887); Le Souëf: Ibis, p. 52 (1898).

Geographical Distribution.—Northern Territory, North Queensland and New South Wales (casual); also New Guinea, including the islands from the Solomons to the Aru Group, as well as the Moluccas.

Nest.—Averaging two feet in length by one foot in breadth; is of a somewhat oval form, slightly compressed, rounded below and above, tapering to a neck, by the end of which it is suspended; the opening is situated in the centre of the widest part; it is almost entirely composed of portions of the stem of the long tendrils of a climbing plant (*Cissus*), matted and woven together, and lined with finer pieces of the

same, a few leaves (generally strips of pandanus leaf), the hair-like fibre of a palm (*Uryota*), and similar materials. One tree contained about fifty nests, often solitary, but usually three or four together in a cluster, sometimes so closely placed as to touch each other. (Macgillivray—Gould).

A nest in the collection of Mr. Dudley Le Souëf may be described as large and bulky, with a hooded entrance in the side near the top; composed chiefly of fibre and tendrils, and lined with the finer portions of fibre. Dimensions: circumference, 2 feet; length, 8 inches; entrance, $1\frac{1}{2}$ inches across.

Eggs.—Clutch, two to three; true oval in form; texture of shell fine; surface glossy; colour, delicate bluish or greenish-white, spotted and blotched, usually only about the apex, with rufous or reddish-brown and dull-purple. Dimensions in inches of proper clutches: A (1) $1.14 \times .76$, (2) $1.13 \times .77$, (3) $1.12 \times .76$; B (1) $1.2 \times .83$, (2) $1.14 \times .8$, (3) $1.13 \times .8$. (Plate 16.) In an exceedingly fine series of these eggs in Mr. Le Souëf's collection there are specimens almost devoid of markings, and others ranging up to those fairly numerous marked, while some have the markings only on the apex in fine speckles or rich blotches.

Observations.—The Australian Calornis or Shining Starling is the most beautiful of its genus, and besides extra-Australian localities, is found in Northern Queensland, where it is a stationary species.

The Calornis is gregarious, breeding in colonies in the same tree season after season. There is such a tree at the rear of the Town Hall, Geraldton (Queensland), where the birds have nested for years, notwithstanding it is now surrounded by the dwellings of man.

Macgillivray, who furnished Gould with interesting notes of the habits and nidification of the Calornis, stated that during the early part of his sojourn at Cape York, the Calornis was often seen passing rapidly over the tree tops in small flocks of a dozen or more. In their flight they reminded him of the English Starling, and like it, made a chattering noise while on the wing. One day a native took him to a breeding place in the centre of a dense scrub, where there was a large cotton-tree standing alone, with its branches literally hung with the pensile nests of this bird.

In the "Proceedings of the Zoological Society" (1875), Dr. E. P. Ramsay writes:—"This is one of the most common birds in the scrubs of the Herbert River. They breed in companies, seemingly all through the year, making large bulky nests of grass and fine twigs with a side opening, hanging from the ends of the leafy boughs in clusters or singly; at times the branches break off with the weight of the nests and their contents. On the Herbert River I noticed they gave preference to a small leaved species of fig resembling *Ficus syringifolia*; and, before a colony began to build, the twigs on many of the branches were broken and began to wither, and hanging down, at a distance resembled in colour the brown nests of this species. I noticed this on two occasions, and remarked to Inspector Johnstone that the birds

were building near his camp. However, when examining the trees through our field-glasses, we found nothing but bunches of dry leaves swinging about in the wind. A few days afterwards we noticed a neighbouring fig-tree in a similar condition, and as both trees were resorted to by these birds, I was under the impression that it was caused by the ravages of some insects which the birds came to feed on; however, about a month afterwards, Mr. Johnstone informed me that these trees had been taken possession of by colonies of Weaver Birds (or "Starlings" as they are called in those parts), and this bulk of brown nests was forming quite a new feature in the landscape."

During my excursion to Northern Queensland, Shining Starlings in flocks of about a score were seen flying swiftly over the tall tree-tops uttering sharp notes like Lorikeets. We shot several, the skins of which made conspicuous additions to our collection. We observed large trees—generally Moreton Bay ash—up the rivers, and in the vicinity of Dalrymple's Gap, crowded with their hanging homes. At the time of our visit (August) the birds appeared to be reconstructing their nests, if not breeding. Were we sure the laying season had commenced we would have almost been tempted to fall one of the tall trees in the hope that amidst the crash and ruin some of the eggs might have been saved.

According to Mr. Broadbent's observations the *Calornis* breeds during the months of August and September.

Mr. Dudley Le Souëf, during October, 1893, found these birds plentiful in the Bloomfield district, working hard reconstructing their nests. Many nests, he observed, get blown down, while the eggs are occasionally upset and found broken underneath. The birds are very noisy, and it is an easy matter to tell when one is in the neighbourhood of their nests. The birds fly about in flocks, even when gathering material off the palm-trees for building. The trees in which they nest are, as a rule, difficult to climb, and, curiously enough, frequently contained the nest of the Red-backed or White-headed Sea Eagle (*Haliastur girrenera*) situated near the top of the tree.

Mr. Le Souëf proceeds to say:—"The ground under them (the nesting trees) is generally covered with dead seeds of various fruits, excreta, &c., and also infested with very small red scrub ticks, which come up one's legs in hundreds, and soon make their presence felt by burrowing into the skin and raising an irritating lump, yet they are so small that they are often difficult to detect. When I was taking a photograph under a large tree my black companions carefully watched me from a distance, not wishing to suffer the inconvenience I afterwards did from these insects."

At Cape York, on the 27th and 28th November, 1896, Mr. H. Barnard took thirty-nine clutches of this Starling's eggs, and on the 28th December, eight sets more. The complement of eggs was two to three, both numbers being about equal.* In one tree which Mr. Barnard ascended he counted no less than 296 nests. The noise created by the birds was almost deafening.

* Mr E. Cornwall informs me that once on Dunk Island he took five eggs from the nest of a *Calornis*. Possibly it was a combination clutch.

FAMILY—PLOCEIDÆ: WEAVERS.

SUB-FAMILY—VIDUINÆ.

392.—STAGANOPLEURA GUTTATA, Shaw.—(257)

SPOTTED-SIDED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 86.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 292.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 418 (1865); North: Austn. Mus. Cat., p. 164 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria and South Australia.

Nest.—Bottle-shaped, large; composed of wire-like and other grasses, and lined inside with fine grass. Usually placed in a bush or among the thick branchlets of a small tree or sapling. Dimensions, 11 inches long; circumference, 20 inches.

Eggs.—Clutch, four to seven, usually five; extremity lengthened in form; texture of shell fine; surface slightly glossy; colour, pure-white. Dimensions in inches: (1) $\cdot 82 \times \cdot 5$, (2) $\cdot 82 \times \cdot 5$, (3) $\cdot 8 \times \cdot 52$. The eggs of this species are the largest known of those of Australian finches.

Observations.—The Spotted-sided Finch, or Diamond Sparrow of the early colonists, is an exceedingly fine and showy creature, wearing generally a brownish coat with a rump of shining scarlet.* Throat and abdomen are pure white, with a conspicuous black band on the chest; the flanks are also black, largely spotted with white, which at once suggest the appropriate name, Spotted-sided Finch. Blood-red bill—the usual conical shape—with eyes to match, and feet purplish-brown, complete a very handsome figure, although only $4\frac{1}{2}$ inches long.

I learn chiefly from that enthusiastic bird fancier, Mr. James Cooper, that in South Australia the Spotted-sided Finch commences to lay about the same time as the Red-browed Finch, but ceases about the early part of January. In choosing a situation for its nest the Spotted-sided Finch shows a preference for the prickly acacias (*A. armata*), and will breed in the same locality with the Chestnut-eared Finch; further, if hard pushed, it will successfully "jump" that bird's nest. In this species the same nest is used all the season, but the structure is extended or added to in front, as the young fill up the rear portion with dirt. The young possess, like most Finches, the black bill until three months old, when it becomes red. The Spotted-sided Finch is a

* There is a singular specimen in the Australian Museum with the upper tail coverts yellow instead of scarlet.

hardy cage-bird, but it has been proved that, if they are trapped when they have young, the old birds pine and die. In Victoria I have usually found the nest of this elegant species placed in forked branchlets of saplings.

The following is one of Mr. J. T. Gillespie's notes:—"December 16th, at Springvale, found six eggs Spotted-sided Finch in the nest from which I had previously taken five eggs, 25th November; also six eggs in nest from which I had taken eggs 4th and 25th November. November 11th took nest with thirteen fresh eggs."

Mr. Gillespie has proved that the Spotted-sided Finch occasionally resorts to old nests to lay. He once found an old egg together with a new set in the same nest (1893). This Finch has also been seen camping in an old nest of the Babbler (*Pomatorhinus*).

Mr. James G. McDougall observed on Yorke Peninsula, South Australia, that the Spotted-sided Finch usually laid six eggs during October and November.

It is a remarkable fact that the Spotted-sided Finch not unfrequently builds its nest among the sticks of the nests of Eagles. Touching this subject, Gould gives the following original extract from his journal:—"October 23rd, found the nest of the Spotted-sided Finch placed under and among the sticks of a Whistling Eagle's (*Haliastur sphenurus*) nest, in which latter the old bird was then sitting. My black companion, Natty, ascended the tree, a high swamp-oak (*Casuarina*), on the bank of the Dartbrook, and brought down the eggs of both birds. The little Finches were sitting on the small twigs close to their rapacious but friendly neighbours."

Mr. H. W. Ford, F.G.S., a good field observer, in taking notes as to how certain birds come to water, noticed that:—"The Diamond Finch (a small spotted black and white and red bird) is never more than a mile or two from water, and comes in all day in hot weather after 10 a.m. They come in by hundreds, and will venture right to one's feet on a hot day if kept back awhile from water."

393.—ZONÆGINTHUS BELLUS, Latham.—(249)

FIRE-TAILED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 78.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 293.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 407 (1865); North: Austn. Mus. Cat., p. 160 (1880).

Geographical Distribution.—South Queensland, New South Wales, Victoria, South Australia and Tasmania, including Kent Group and Furneaux Group in Bass Strait.

Nest.—Bottle-shaped, or covered in, with a spouted side entrance; constructed of grasses chiefly, with the addition of portions of other

plants; lined inside somewhat sparingly with fine grasses and fur or feathers. Usually situated in thickly-foliaged tree or bush. Dimensions about 12 inches in length by 18 inches in circumference round thickest part of the body.

Eggs.—Clutch, five to seven, occasionally eight; long oval or lengthened in form; texture of shell fine; surface without gloss; colour, pure white. Dimensions in inches of a full clutch: (1) $\cdot 75 \times \cdot 53$, (2) $\cdot 75 \times \cdot 52$, (3) $\cdot 73 \times \cdot 51$, (4) $\cdot 72 \times \cdot 51$, (5) $\cdot 71 \times \cdot 52$, (6) $\cdot 69 \times \cdot 52$, (7) $\cdot 69 \times \cdot 49$.

Observations.—This pretty bird has its upper surface, including wings and tail, coloured brownish-olive; the underneath parts are grey, beautifully crossed with lines of black; the rump and base tail feathers are of shining scarlet. The bill is red or crimson, feet flesh-coloured, eyes dark-brown, surrounded with light bluish eyelashes. Total length of an adult specimen, $4\frac{3}{8}$ inches.

The principal habitat of this fine Finch is Tasmania and some of the islands in Bass Strait, especially Kent Group and Flinders Island, where during the expeditions of the Field Naturalists' Club of Victoria the birds were noticed in small families. Their singular plaintive note always attracted attention, and when on the wing the brilliant scarlet colouring of the rump was most striking to the eye. They appeared partial to the dense scrub and herbage near springs or watercourses, and would now and again dart up into a sapling or on to a dead twig, thus displaying their pretty figures. Gould, who first described the nest and eggs, states the Fire-tailed Finch breeds from September to January, during which period it rears two or three broods; but on Kent Group, during our visit, 1890, we observed they were only building in the upper forks of tea-tree (*Melaleuca*) in November. The nests had, interwoven with the grass, portions of the red-flowering epacris, orchid stems, and pine branchlets.

At rare intervals I have noticed this Finch in secluded low scrubby gullies near the base of the Dandenongs. In years gone by it used to be found in the neighbourhood of Mordialloc, and was known as the Guinea Hen Finch.

Mr. John W. Mellor has found this Finch breeding as far west as the Lakes Alexandrina and Albert district, South Australia.

Breeding months September (? November) to January or February.

394.—ZONÆGINTHUS OCLATUS, Quoy and Gaimard.—(250)

RED-EARED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 79.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 294.

Previous Description of Eggs.—Campbell: Proc. Roy. Soc., Victoria, new ser., vol. iii., p. 3 (1890).

Geographical Distribution.—West Australia.

Nest.—The usual bottle-shaped appearance, with the entrance through the neck slightly ascending before dropping into the egg chamber or interior. The structure is bulky, consisting chiefly of grasses, and lined inside with brittle material and downy seed vessels; usually situated in paper-bark (*Melaleuca*) trees on the margin of a stream or swamp, but sometimes placed in a banksia or other thick bush.

Eggs.—Clutch, four to five; inclined to oval in form; texture of shell fine; surface without gloss; colour, pure white. Dimensions in inches: (1) $\cdot 7 \times \cdot 5$, (2) $\cdot 7 \times \cdot 48$, (3) $\cdot 68 \times \cdot 48$.

Observations.—During my own travels in South-western Australia in 1889 I found this species fairly numerous, especially in the scrub surrounding swampy situations near the coast, as well as along creeks in the forest. It is undoubtedly the western representative and near ally of the Fire-tailed Finch (preceding species) of eastern parts and Tasmania. The red markings on the rump and the beautiful patch of feathers behind the eye are, however, vermilion rather than scarlet; the conical-shaped bill is bright vermilion; the gay markings are enhanced by the sombre brownish-olive coat irregularly banded with black; the dark under surface is spotted largely with white. The eyes are red, surrounded with a narrow circle of a beautiful greenish-blue skin.

The Red-eared Finch, or the "Native Sparrow" of the colonists, is exactly the same size as the Fire-tailed Finch (*Z. bellus*), and, like that bird, builds its bulky nest generally amongst the uppermost branches of a melaleuca or tea-tree overhanging a creek or even standing in a swamp. These birds were nest-building in the Karridale Forest in October, and the first eggs I procured were taken on the 12th of that month. Like its eastern ally, the breeding season of the Red-eared Finch probably lasts till January.

395.—EMBLEMA PICTA, Gould.—(268)

PAINTED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 97.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 295.

Previous Descriptions of Eggs.—North: Report Horn Scientific Expedition, p. 88 (1896).

Geographical Distribution.—West, North-west and South (Central) Australia and New South Wales (accidental).

Nest.—Resembles those of the other Finches, being bulky, bottle-shaped, composed of dried grasses, and lined with feathers. Usually situated in a low bush.

Eggs.—Clutch, four to five; inclined to oval in shape; texture of shell fine; surface without gloss; colour, white, with a faint bluish tinge. Dimensions in inches of examples in Mr. G. A. Keartland's collection: (1) $\cdot 58 \times \cdot 45$, (2) $\cdot 57 \times \cdot 4$, (3) $\cdot 56 \times \cdot 4$.

Observations.—The Fine Painted Finch was discovered in 1839 on the north-west coast, a single example being procured by the late Dr. Bynoe and presented to Gould. However, it was stolen, together with some other valuable birds, from Gould's collection in 1846.

Little or nothing was actually heard of this rare Finch (except that its habitat was extended to South Australia on a published list of the birds of that State by Mr. F. G. Waterhouse, C.M.Z.S., 1876) till 1894, when the Horn Expedition found it in Central Australia, where several skins were obtained by Mr. G. A. Keartland, the ornithological collector of the party, who states:—"These beautiful Finches were first found in the rocky gorges of McMinn's Range, and subsequently at Stokes' Pass, Glen of Palms, and Bagot's Spring. They are very timid and somewhat difficult to approach. Although there is no sexual difference in plumage, they vary with age. The scarlet patch, so conspicuous on the breasts of adults, is almost or entirely absent on the young ones, and the rich black on the under parts of the mature birds is also replaced by a smoky black on the young. Several of their nests were seen, which closely resembled those of *Taniopygia castanotis*, but were a trifle larger in size. They were placed on low bushes, built of grass, and oval-shaped. Unfortunately they all contained young birds. The eyes of the adults being white, give the live birds a remarkable appearance."

In the Australian Museum, Sydney, there are three examples of birds obtained from a small flock of these Finches which suddenly appeared at Campbelltown, New South Wales, in August or September, 1896. No doubt the drought drove them from their usual tracks.

After the occurrence of a good rainfall in the early part of 1898, Mr. Tom Carter informs me Painted Finches appeared near the North-west Cape. I had long suspected their presence in Western Australia, because Mr. Frank Wittenoom reported to me having seen in the Upper Murchison district "a red species of Finch," no doubt referable to the bird at present under consideration. I also heard of similar birds having been seen inland from Perth.

This rare Finch was procured by the Calvert Expedition (1896-7) at Johann Springs, where they came in company with the Chestnut-eared Finch to quench their thirst. They were very shy, and single specimens were only procured, at the sacrifice of many of their companions. The Painted Finch was afterwards seen near the hospital at Derby, and when the steamer "Australind" was off Broome, five Painted and two Chestnut-eared Finches perched in the rigging and kept flying about the vessel for some time. They were never seen in large flocks.

396.—TENIOPYGIA CASTANOTIS, Gould.—(258)

CHESTNUT-EARED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 87.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 311.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); North: Austrn. Mus. Cat., p. 165 (1889).

Geographical Distribution.—Australia in general.

Nest.—Bottle-shaped; composed of grasses or greyish flowering stalks of a certain plant, with the majority of the heads facing towards the entrance, and lined inside sparingly with fine, soft grasses and feathers. Usually placed in a low thick bush or grass tussock. Dimensions about 10 inches in length by 15 inches in girth; entrance about 1 inch across. Has been known to nest in a hollow log and underneath (adjoining) a Hawk's nest.

Eggs.—Clutch, four to seven, usually six; oval, some elliptical in shape; texture of shell fine; surface slightly glossy; colour, white, with a very faint bluish tinge. Dimensions in inches of a full clutch: (1) $\cdot 63 \times \cdot 42$, (2) $\cdot 62 \times \cdot 43$, (3) $\cdot 61 \times \cdot 44$, (4) $\cdot 6 \times \cdot 44$, (5) $\cdot 6 \times \cdot 42$, (6) $\cdot 6 \times \cdot 41$.

Observations.—This active little species is probably the most widely distributed of Australian Finches, but South Australia is one of its strongholds. It is a sharp, active little chap, in a drab-coloured coat, with a lighter coloured stomach. There is a conspicuous patch of chestnut (from which it properly derives its vernacular name) about the ears and sides of the face. The throat and chest are prettily pencilled with fine black lines, while the chestnut flanks are adorned with white oval spots. The bill is bright chestnut, and eyes and feet somewhat of the same colour. The bird is comparatively small, being barely 4 inches in total length. They may be seen during June, July, and August in flocks up to fifty or sixty in number; but sometimes there are as many as two hundred in a company. They then pair off and commence at once to build, laying towards the end of September and during October. However, the majority lay during November, and the breeding season continues till January or later according to the season.

The Zebra Finch, as the Chestnut-eared species is more frequently called, nests in the same locality as the Spotted-sided Finch, preferring prickly acacias wherein to build its nest, and, like the latter bird, the Chestnut-eared variety adds to and elongates the front of the nest as the young block up the rear portion with excreta. The old nest also serves for a home to roost in, for sometimes a dozen or more birds may be flushed out of one nest during night time.

As is the case with the majority of Finches, incubation lasts fourteen days. The young when newly hatched are little hairy creatures with abnormally large head and mouth. At the age of four weeks they

quit the nest, but are attended afterwards by their respective parents, and on joining a flock are promiscuously fed by any bird. Young and fresh eggs have been found in the same nest, proving that the nest is re-used. Mr. T. Hurst, Caulfield, tells me that some Chestnut-eared Finches, hatched in his aviary in November, laid eggs the March following. No wonder these little birds are occasionally seen in such prodigious numbers.

Mr. Tom Carter reports from North-west Australia that the Chestnut-eared Finch, like many other species of birds, lays after a good rain. The same applies to Northern Queensland and the far interior, for Mr. Price Fletcher records that Finches (generally) build during August and September, and hatch a small brood, then cease laying till the Christmas rain begins. Still, he goes on to say, they are uncertain, for they were then (beginning of June) breeding in numbers in the Port Curtis district.

Respecting the Chestnut-eared Finch in the Report of the Horn Scientific Expedition to Central Australia, during the winter of 1894, Mr. Keartland states:—"At Devonport Creek nine nests (three with eggs) were found in one small bush. . . . Other nests were found in grass tussocks and prickly 'nigger-head,' and at Alice Springs one was built on a shelf inside a blacksmith's shop."

Again, during the historical and hazardous Calvert Expedition, when two of the explorers succumbed to the terrors of the North-west desert, perishing from thirst, Mr. G. A. Keartland manfully managed to make observations and record notes of the birds, although he was forced, on account of the risk of life, to abandon his specimens in the desert. He writes:—"These little birds had a peculiar share in our interest, as their presence in numbers is a pretty good indication of the proximity of water. Wherever rock-holes or wells containing water were found immense flocks of these birds were seen. They seem to possess an insatiable thirst, and will alight in flocks to drink close to where men are working. When we were baling water for the camels they frequently perched on the sides of the dishes to drink. I am strongly of opinion that they possess the ability to scent water, as on several occasions during the hot days of April, flocks perched on the trees under which we were enjoying the mid-day halt, and were not easily scared, but kept hopping on the water casks and near the pannikins containing hot tea. Although constantly chased by my dog, they simply evaded the attack, and as soon as allowed drank from a tin of water placed for them. At one rock-hole, passed soon after leaving Lake Way, they were in such numbers as to pollute the water with their droppings. They were found from Mulla-wa to the Fitzroy River. In some cases three or four nests containing fresh eggs were found on one bush. They build in all sorts of places, nests being found in the tall desert gums, in holes in hollow logs, on low bushes, or on the ground under the low-spreading saltbush. They often start laying as soon as the foundation of the nest is placed in position, and keep on building and laying until both operations are finished. The material used is invariably dry grass stems. The birds seek the shelter of their nests at night, even after their broods are hatched. Notwithstanding

that one pair, which built their nest in our bough shade, was frequently handled by our Afghans at the camel depot, they remained there, laid a full clutch of bluish-white eggs, and reared their brood. Mr. Wells found a Wedgebill's nest near our camp which had been appropriated by a pair of these Finches. It contained one egg when first discovered, but before the clutch was completed the birds had finished roofing it over."

I received eggs that were taken by Mr. H. C. Burkitt at Cooper's Creek, on 24th March, 1887, while I believe the eggs of this species have been found as late as May in the north-west interior of New South Wales. A nest I found (2nd December, 1890) of this species, which was placed in a polygonum bush not far from the Murray River, contained a complement of six eggs, and exteriorly was composed entirely of the dead flowering stalks of herbage, botanically called *Calocephalus sonderii*.

At Benjeroop, Victoria, November, 1896, a party of field naturalists found a nest of this little Finch, containing six eggs, attached to the underneath portion of a Brown Hawk's nest.

Concerning this Finch attaching its nest to that of a bird of prey, Mr. A. Zeitz, of the Adelaide Museum, has favoured me with the following interesting note:—"I found in a small waterless creek near Callabonna Lake, November, 1894, all the nests of Square-tailed Kite (*Lophoictinia isura*) occupied by the Chestnut-eared Finch, or rather their nests being built quite into the lower portion of the Kite's nest. Nearly every Kite's nest contained one Finch's nest. I am sure of the fact, as I got a number of the Finch's eggs taken in my presence."

The Chestnut-eared Finch readily breeds in aviaries.

397.—STICTOPTERA BICHENOVII, Vigors and Horsfield.—(251)

BANDED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 80.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 313.

Previous Descriptions of Eggs.—Campbell: Southern Science Record (1883); North: Austr. Mus. Cat., p. 161 (1889).

Geographical Distribution.—North-west Australia, Northern Territory, Queensland, New South Wales and South Australia (interior).

Nest.—The usual bulky, bottle-shaped construction of grasses; lined inside with feathers and various soft vegetable substances; usually situated in a bush or tall grass.

Eggs.—Clutch, four to five; oval in shape; texture of shell fine; surface without gloss; colour, white, with the slightest perceptible tinge. Dimensions in inches of a proper clutch: (1) $\cdot 6 \times \cdot 4$, (2) $\cdot 55 \times \cdot 42$, (3) $\cdot 55 \times \cdot 42$, (4) $\cdot 53 \times \cdot 42$.

Observations.—I had an opportunity of witnessing this modest little Finch, which is generally called the Double Banded, at home in Central Queensland, one of its chief habitats.

The bird is somewhat difficult to accurately describe, but may be summed up thus:—Crown of head and back brownish in colour, each feather beautifully pencilled with a darker shade. The wings are delicately freckled with grey; rump white; under surface light coloured crossed by two narrow bands (hence the name Double-banded Finch of the trapper), one on the throat and the other on the breast; eyes dark and bill light bluish hue.

Gould regretted he was not fortunate enough to obtain its nest or eggs, and it was not till 1883 that I received and described specimens of eggs kindly forwarded by the late Mr. George Barnard, of Coomooboolaroo.

In the Chinchilla district, Mr. K. Broadbent records finding a nest of this Finch containing young birds 11th May, 1885. Eggs have also been taken in March and April and from June to August.

398.—STICTOPTERA ANNULOSA, Gould.—(252)

RINGED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 81.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 314.

Previous Descriptions of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. iii., 2nd ser., p. 146 (1888); North: Trans. Roy. Soc., South Australia, vol. xxii., p. 143 (1898).

Geographical Distribution.—North-west Australia and Northern Territory.

Nest.—The usual bottle-shaped structure of dried grasses, lined with finer grass, and situated in a low bush.

Eggs.—Clutch, four to six; inclined to oval in form; texture of shell fine; surface without gloss; colour, white, with the faintest bluish tinge. Dimensions in inches of a proper clutch: (1) $\cdot 59 \times \cdot 42$, (2) $\cdot 57 \times \cdot 42$ (3) $\cdot 57 \times \cdot 41$, (4) $\cdot 5 \times \cdot 42$.

Observations.—Touching this interesting northern Finch, in the "Proceedings of the Linnæan Society of New South Wales," Mr. North states:—"This pretty little Finch is found frequenting the northern and north-western portions of the Australian Continent, where it takes the place of its near ally, *S. bichenovii* of the eastern coast. Both Mr. E. J. Cairn and the late Mr. T. H. Bowyer-Bower obtained a number of specimens of this bird in 1886 at Derby, North-western Australia. For the opportunity of describing the eggs I am indebted to the Hon. William Macleay, who has lately received them from one of his collectors; they were taken near the head of the Leonard River, North-western Australia, on the 2nd October, 1887."

Regarding its nidification in the open, lovers of these aviary pets will read with pleasure Mr. Keartland's remarks:—"This pretty Finch was only seen near the Fitzroy River, where it was breeding during February and March. By a close observation of the material used it is possible to determine to which species of Finch the nest belongs. The Ringed Finch usually chooses a site in some drooping branch about ten feet from the ground. In the case of those examined the outer covering was invariably very coarse—dead grass loosely woven together—but the lining was of the finest silver-grass, and a marvel of neatness. Six eggs form the usual clutch. Although some were perfectly white, one clutch from which I caught the bird had a faint bluish tinge, similar to those of the Chestnut-eared Finch."

399.—MUNIA CASTANEITHORAX, Gould.—(265)

CHESTNUT-BREADED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 94.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 340.

Previous Descriptions of Eggs.—Ramsay: Ibis, p. 232 (1868), also Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1147 (1886).

Geographical Distribution.—Northern Territory, Queensland, and New South Wales.

Nest.—Oval, bulky, with spouted side entrance; composed of dried "blady"-grass and other grasses; lined inside with fine dried grass, the stalks of which are evidently taken in first, leaving some of the flowering heads protruding from the entrance. Usually situated in a crop of "blady"-grass, some of the green stalks of the grass being woven into the outside of the nest. Dimensions 7 inches in length by diameter in thickest part $4\frac{1}{2}$ to 5 inches, or a circumference of about 15 inches; entrance about $\frac{1}{2}$ inch across.

Eggs.—Clutch, four to six; oval inclined in shape; texture of shell fine; surface slight trace of gloss; colour, pure white. Dimensions in inches of a proper clutch: (1) $\cdot 67 \times \cdot 47$, (2) $\cdot 67 \times \cdot 46$, (3) $\cdot 63 \times \cdot 46$, (4) $\cdot 63 \times \cdot 45$, (5) $\cdot 62 \times \cdot 46$; of three examples from a set of six: (1) $\cdot 66 \times \cdot 45$, (2) $\cdot 65 \times \cdot 45$, (3) $\cdot 64 \times \cdot 43$.

Observations.—This beautiful Finch possesses a reddish-brown or buff-coloured coat, with a broad band of light-chestnut on the breast, ornamented below with a black line. Rest of the under surface white, except a few feathers tipped with black upon the sides. Head dark-grey, relieved with a blackish-brown face and bill; total length, about 4 inches.

Concerning the Chestnut-breasted Finch, Dr. Ramsay states:—"This species is widely distributed over the whole of the northern parts of New South Wales and Queensland. It breeds plentifully in the extensive grass beds of the Clarence and Richmond River districts, also at Maryborough, Queensland. The nest is a large structure, in shape like a flask or bottle placed on its side, and the entrance, which is about an inch and a-half wide, is situated at the end of the neck, the whole being about fourteen inches in length by six inches in diameter at its widest part. It is usually built near the top of some bushy shrub, or in tangled masses of vines, and composed of grasses and the leaves of reeds with fine stems of plants (*Goodenia* or *Lobelia*, according to the district the owner frequents), being lined with finer materials—the downy tops of reeds and flags, and occasionally a few feathers. It closely resembles the nest of *Neochmia phacton* (Crimson Finch), which I received from Port Denison, and, like that, is often found placed among the stiff leaves of a grass-like plant growing upon the sides of the trees in and about the edges of the scrubs."

With regard to the distribution of this species, Mr. K. Broadbent says:—" *Donacola castaneithorax*, the Chestnut-breasted Finch, commonly called the Bullfinch or 'Bully,' is plentiful on the Bellenden plains about the latter part of the year. It may be of interest to note that I saw a flock of these Finches at Chester's Point, on Thursday Island, during one of my visits to that place, though I have not met with them on the immediate mainland of Cape York Peninsula."

The eggs of the Chestnut-breasted Finch in my collection were taken from nests near the ground situated in so-called "blady" grass, one set of five being found by Mr. Percy Young, at Maryborough, Queensland, 28th January, 1898, another set of six eggs being taken by my son Archie in the Richmond River district, New South Wales, on the 17th of the same month. In Northern Queensland full clutches have been taken in April.

400.—MUNIA FLAVIPRYMMA, Gould.—(267)

YELLOW-RUMPED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 96.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 345.

Geographical Distribution.—Northern Territory.

Nest and Eggs.—Undescribed.

Observations.—A single specimen of this extremely rare northern Finch was presented to Gould by the late Dr. Bynoe, who, it is stated, procured it on the Victoria River during the surveying cruise of H.M.S. "Beagle," 1839. Since that date there is positively nothing to record of its economy.

401.—MUNIA PECTORALIS, Gould.—(266)

WHITE-BREADED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 95.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 354.

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland.

Nest and Eggs.—See Appendix.

Observations.—For the two original specimens of this Finch Gould was indebted to Mr. C. Dring, then of H.M.S. "Beagle," who procured the new birds on the north-west coast. No notes of their habits or economy accompanied the skins, nor have any particulars respecting the species been published up to the present day, except the brief remarks by Messrs. North and Keartland on the "List of Birds" collected by the Calvert Expedition (1896-7) to the north-west, where this Finch was only seen between the Telegraph Station and the Margaret River. It proved very shy, and although frequently disturbed whilst feeding amongst the long grass, or seen flying from tree to tree, only two or three were shot.

402.—AIDEMOSYNE MODESTA, Gould.—(255)

PLUM-HEAD FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 85.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 368.

Previous Descriptions of Eggs.—Gould: Birds of Australia (1848); also Handbook, vol. i., p. 414 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1147 (1886); North: Austr. Mus. Cat., p. 162 (1889).

Geographical Distribution.—South Queensland, New South Wales, Victoria and South Australia.

Nest.—The usual bulky, bottle-shaped appearance; composed of grasses and lined inside with feathers. Generally placed in a low bush, but sometimes in tall grass.

Eggs.—Clutch, five to six; oval, or stout oval in shape; texture of shell fine; surface slightly glossy; colour pure white. Dimensions in inches of a proper clutch: (1) $\cdot 67 \times \cdot 49$, (2) $\cdot 66 \times \cdot 48$, (3) $\cdot 65 \times \cdot 47$, (4) $\cdot 65 \times \cdot 46$, (5) $\cdot 64 \times \cdot 46$.

Observations.—This Finch, of modest appearance, is known to the dealers and trappers as the Plum-head or Diadem Finch. The majority of Australian Finches have proved to be hardy cage birds, but the plain-coloured Plum-head is an exception, and is known as a "soft" bird—that is, it will not endure rough usage, or is not easily reared. The bird's dress is greyish or drab-coloured, striated or barred with darker markings on the rump and on the whole of the under surface. The only bright colour is a wash of deep-crimson on the forehead (hence the trapper's name, Plum-head). Bill black, eyes reddish-brown, and legs fleshy-white. Total length between 4 and 5 inches.

Its habitat ranges from Southern Queensland to South Australia, including the interior provinces of Victoria. Some recent authorities, however, do not include Victoria in the geographical distribution of this species, but the late Mr. Henry Morrês, C.E., left evidence of having taken its eggs in Victoria years ago, while Mr. Dudley Le Souëf found it breeding in the Mallee district, 1892.

The first recorded nest of the Plum-coloured Finch was taken by Gilbert, the ornithologist who accompanied Dr. Leichhardt's Expedition from Moreton Bay to Port Essington, 1845.

October to January are probably the breeding months, but in Queensland it would be difficult to limit the season, which is there so much regulated by rains; the birds may lay any time when the grass seeds ripen.

403.—ÆGINTHA TEMPORALIS, Latham.—(253)

RED-BROWED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 82.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 373.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. 1., p. 412 (1865); North: Austn. Mus. Cat., p. 162 (1886).

Geographical Distribution.—Queensland, New South Wales, Victoria and South Australia.

Nest.—Bulky, bottle-shaped, with a side entrance through the neck; constructed of grasses generally gathered green; lined inside with fine grasses and feathers; usually situated in the upright forked branches of thick bush or small tree, often near a stream. Dimensions about 12 inches in length by a girth in thickest part of 18 to 20 inches.

Eggs.—Clutch, usually five or six; lengthened or pointed oval in shape; texture of shell close and fine; surface slightly glossy; colour, pure white. Dimensions in inches of a proper clutch: (1) .65 × .43, (2) .64 × .43, (3) .64 × .42, (4) .64 × .42, (5) .64 × .42.

Observations.—This species is one of the smallest, and probably is the commonest Finch in Eastern Australia. In dress it is not so showy as some of its cousins, the garb being on the upper surface olive-brown, with a lighter coloured under surface conspicuously relieved by the crimson-coloured rump and eyebrows *à la* Mephistopheles, but red instead of black, hence the vernacular name, Red-browed Finch. The bill is blood-red, eyes brownish, and legs yellowish-white. Perhaps I should add that the bill is black in youthful birds up to the age of three months, or the first moult, and the red eyebrows, which give the little bird an agreeable, pert appearance, are not donned until the same age.

The "Wax Bill," as it is more familiarly named, is amongst my earliest recollections as a boy, when I used to find in the prickly bursaria bushes on the high banks of the Werribee its bulky spouted nest, with beautiful pearly-white eggs. Since, I have examined many nests of the Red-browed Finch taken from tea-tree (*Melaleuca*) overhanging creek or river inland, as well as from the coastal tea-tree or *Leptospermum* scrub near the sea, November proving the best month for fresh eggs.

In South Australia the Red-browed Finch commences to lay at the beginning of October, the breeding season continuing to the end of February. During that period probably three broods are reared. The earliest eggs I have found in Victoria were obtained on 26th October. These birds build in pairs and construct a new nest for each brood.

For valuable field observations of this species and of the Spotted-sided and Chestnut-eared Finches I am indebted to Mr. James Cooper, an enthusiastic bird trapper, who, speaking of South Australia, noted the three species in company, and that while the Red-browed Finch separated to breed, the Spotted-sided and Chestnut-eared birds frequently nested in the same locality. Young Red-browed Finches, or "Wax Bills," have been known to feed squabs of other Finches which have been crying for food.

Mr. Hermann Lau observed in Southern Queensland that this little Finch built a most bulky nest, placing it between branches of shrubs or trees from five to twenty feet from the ground. He has noticed the bird building at all seasons, but whether for laying in or for shelter against wind and cold he did not mention.

Two of our field naturalists, Messrs. Edward Cornwall and C. French, jun., have both reported the occurrence of the egg of the Narrow-billed Bronze Cuckoo in the nest of the Red-browed Finch. Mr. North records a similar experience which once came under his notice. At first sight it appears incongruous that a granivorous bird should rear the young of an insectivorous species. But nature does not often go astray. It has been proved that the Red-browed Finch, as well as other varieties, notably the Spotted-sided Finch, will devour ravenously grubs and other larvæ of insects besides grain food. Therefore, there remains a chance for the young Cuckoo, although I never knew of an instance of one being reared in a Finch's nest.

Judging by a skin in the Adelaide Museum, from Cape York Peninsula, Queensland, the northern bird differs somewhat from the

southern form by its smaller size, wings and mantle more yellowish (golden-green), and under surface lighter coloured, especially on the throat and abdomen, which are almost white, while the scarlet brow is more intense in colouring.

Comparative dimensions of northern and southern forms are:—Total length, 3·8 inches; wing, 1·87 inches; tail, 1·2 inches; tarsus, ·62 inch; bill, ·35 inch (north); total length, 4·2 inches; wing, 2·04 inches; tail, 1·37 inches; tarsus, ·65 inches; bill, ·35 inches (south).

Mr. A. H. C. Zeitz, the assistant curator, first drew my attention to the variation.

After more material has been examined, and should the difference be constant, I should suggest the name *E. minor*, or the Lesser Red-browed Finch, for the northern bird.

404. —BATHILDA RUFICAUDA, Gould.—(254)

RED-FACED FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 84.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 374.

Previous Descriptions of Eggs.—Campbell: Victorian Naturalist (1886); Rec. Austr. Mus., vol. ii., p. 14 (1892); North: Trans. Roy. Soc., South Anstralia, vol. xxii., p. 142 (1898).

Geographical Distribution.—North-west Australia, Northern Territory, Queensland and New South Wales.

Nest.—The usual bottle-shaped structure of grasses, but generally plucked green; lined with finer grass and sometimes a few feathers, and placed in a low bush or in tall grass.

Eggs.—Clutch, five; long oval in shape; texture of shell fine; surface slightly glossy; colour, pure white. Dimensions in inches: (1) ·7 × ·48, (2) ·68 × ·48, (3) ·6 × ·46.

Observations.—I observed the Red-faced, or, as it is sometimes called the "Star" Finch, flying in flocks in company with its pretty crimson cousin, *Neochmia phaeton*, in Northern Queensland. Its olive-brown plumage is set off with a crimson face, in addition to the red coloured tail, from which it takes its name. Nearly all the under surface is olive-grey, each feather being marked near the tip with a large spot of white; bill scarlet; eyes hazel inclined; feet yellowish; total length, between 4 and 5 inches.

The eggs of this species in my collection were taken on the 20th March, 1877, in the Gulf of Carpentaria district, by Mr. T. A. Gulliver, and were those described by me after my return from Queensland, 1886.

The eggs of the Red-faced Finch must be somewhat rare in collections, for it was not until six years afterwards that Mr. A. J.

North described in the Records of the Australian Museum two eggs received from Dr. Henry Sinclair. It is also mentioned that a small flock of these Finches was seen, and a male specimen procured, during the winter of 1891 near Lithgow, in the Blue Mountains. Surely these favourite Finches were far south of their usual habitat, or perhaps they had escaped from a caged consignment.

Mr. Keartland observed these pretty Finches at home in the north-west. They were found in the vicinity of the telegraph line, near the junction of the Fitzroy and Margaret Rivers, where they appeared to be permanently located. They were generally seen in small flocks. A nest of this species, from which he shot the bird, was flask-shaped, and built entirely of fresh, green grass, from which the colour had not had time to fade. It contained five white eggs.

405.—*POEPHILA ACUTICAUDA*, Gould.—(261)

LONG-TAILED GRASS FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 90.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 375.

Previous Description of Eggs.—North: Proc. Linn. Soc., N.S. Wales, vol. ii., 2nd ser., p. 408 (1888).

Geographical Distribution.—North-west Australia and Northern Territory.

Nest.—Resembles that of *P. cineta*, flask-shaped; composed of grasses, and placed in long grass or low bush (North).

Eggs.—Clutch, usually five; somewhat lengthened in form; colour, white. Dimensions in inches: (1) $\cdot 71 \times \cdot 48$, (2) $\cdot 69 \times \cdot 46$, (3) $\cdot 68 \times \cdot 48$, (4) $\cdot 65 \times \cdot 43$, (5) $\cdot 65 \times \cdot 4$. (North.)

Observations.—The Long-tailed Grass Finch is a rare aviary pet. I saw several pairs in the Eastern Market, Melbourne, 1894, priced at ten shillings each. The bird's true home is the Northern Territory and North-west Australia, where Gould, who first named it, says that, like its analogue, the Black-throated Grass Finch (*P. cineta*), it inhabits the open plains bordering streams, and feeds on the seeds of various grasses and other plants. The Long-tailed Finch is delicately plumaged, taking its name from the long central tail-feather. Crown of the head and cheeks are grey; upper and under surface of the body fawn-colour, becoming more delicate and assuming a pinkish tinge on the abdomen. Commencing under the chin and expanding over the throat is a shield of soft black. A band across the rump and tail is also jet black, while the upper and under tail coverts are pure white, the whole being rendered more beautiful by dark eyes surrounded by reddish eyelashes, and waxy-yellow bill and feet to match. Including

the elongated tail-feather, which is about four inches in length, the bird measures nearly six inches. The nesting habits of this species resemble those of the Black-throated Finch.

The late Mr. Bowyer-Bower procured a fine series of the elegant Long-tailed Grass Finches, while collecting in North-west Australia, and September and the three following months constitute the breeding season. In the same region, when with the Calvert Expedition, Mr. Keartland writes:—"This Finch was seen for the first time by our party near the Fitzroy River as we approached Derby, and at the wells which supply the latter place with water. The birds are very tame, and easily caught by simply covering the troughs and placing a dish of water under a frame covered with cheese-cloth."

406.—*POEPHILA CINCTA*, Gould.—(264)

BLACK-THROATED GRASS FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 93.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 376.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1147 (1886); Campbell: Victorian Naturalist—Read 14th December, 1885—(1886).

Geographical Distribution.—Queensland and New South Wales.

Nest.—Bulky, bottle-shaped; composed of grasses, lined with feathers, and placed according to circumstances in a sapling, *Pandanus* tree or in tall grass.

Eggs.—Clutch, five to nine, but usually five or six; long oval in shape; texture of shell fine; surface without gloss; colour, white. Dimensions in inches: (1) $\cdot 72 \times \cdot 48$, (2) $\cdot 71 \times \cdot 47$; of three examples *er* a clutch of seven: (1) $\cdot 64 \times \cdot 5$, (2) $\cdot 6 \times \cdot 51$, (3) $\cdot 6 \times \cdot 5$.

Observations.—The Black-throated, or, as it was formerly called, the Banded Grass Finch, frequents Queensland and a portion of New South Wales, where Gould procured the bird. Some later authorities do not include New South Wales as a habitat of this Finch.

This Grass Finch is a chestnut-coloured bird, with a silvery-grey head and conspicuous black throat. A black band surrounds the lower part of the body, hence the somewhat far-fetched vernacular title, Banded Finch. I think the name "Black-throated" of the trappers is more acceptable, and at once distinguishes the bird from the other varieties. The short tail is also black, in striking contrast with the upper and under tail coverts, which are pure white; bill black, eyes brownish, and feet flesh-coloured. Total length $4\frac{1}{2}$ inches.

The nest of this chubby little bird I had the pleasure of taking in Queensland, at that station now so well known to naturalists, namely,

Coomooboolaroo. The nest was the ordinary kind, placed near the top of a sapling. I mentioned, when dealing with the Chestnut-eared Finch, that I had found a nest entirely built of the stalks of a flowering herb (*Calocephalus*). I find amongst Mr. Hermann Lau's MS. notes that on one occasion he found a nest of the Black-throated Finch constructed outwardly of nothing but everlasting flowers. The Black-throated Finch, according to trappers and dealers, is a hardy bird and readily breeds in aviaries.

According to the experience of the Messrs. Barnard, the Banded Finch frequently lays seven eggs to a clutch, but usually five, and the laying months are generally according to the season.

407.—*POEPHILA PERSONATA*, Gould.—(262)

MASKED GRASS FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 91.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 377.

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland.

Nest and Eggs.—Undescribed, but doubtless are similar to those of the other Grass Finches.

Observations.—This beautiful Grass Finch is a native of Northern Australia, where Gould states "several specimens were shot by Gilbert during an excursion from Port Essington towards the interior of the country, who states that it inhabits grassy meadows near streams, being congregated in flocks of from twenty to forty. When on the wing it utters a very feeble cry of 'twit-twit-twit,' but at other times pours forth a drawn-out mournful note, like that of some of the other Grass Finches."

This Finch is frequently seen in the southern markets. It derives its name, "Masked," from the black velvety ring on the face surrounding its yellowish bill, the rest of the plumage being mostly light-brown. The lower part of the abdomen is black, while the lower part of the rump, upper and under tail coverts are white. Total length, $5\frac{1}{2}$ inches.

Dr. Ramsay has suggested that *P. personata* and *P. leucotis* are possibly identical, but Dr. C. E. Thorp, a keen Finch fancier, and who has kept both kinds of birds in captivity, writes, "they appear to be very distinct." So "Doctors" will differ.

408.—*POEPHILA LEUCOTIS*, Gould.—(263)

WHITE-EARED GRASS FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 92.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 377.

Geographical Distribution.—North-west Australia (probably), Northern Territory and North Queensland.

Nest and Eggs.—Undescribed, but doubtless resemble those of the other members of the genus.

Observations.—This beautiful and very distinct Grass Finch was discovered during Leichhardt's wonderful expedition from Moreton Bay to Port Essington, and was shot by Gilbert near the Lynd River, 3rd June (the month he was killed), 1845.

409.—*POEPHILA ATROPYGIALIS*, Diggles.*

BLACK-RUMPED GRASS FINCH.

Reference.—Queensland Phil. Soc., vol. ii., p. 4 (1878).

Previous Description of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. ii., p. 111 (1878).

Geographical Distribution.—Northern Territory and Northern Queensland.

Nest.—Similar to those of the other Grass Finches, and situated in tall grass, a low bush, or sometimes among the spirally-placed hard leaves of a pandanus tree.

Eggs.—Clutch, four to six; roundish in shape; texture of shell very fine; surface slight trace of gloss; colour, white (with a faint greenish

* Mr. E. Hartert described in the "Ibis" last October (1899) a supposed new Grass Finch, naming it *Poephila nigrotecta*, collected at Cape York by Mr. A. S. Meek, resembling the Black-throated Grass Finch (*P. cincta*), but smaller and having the upper tail coverts black instead of pure white. The description answers to Diggles's *P. atropygialis*, which, it should be stated in justice to Mr. Hartert, appears to be shrouded in mystery because of its somewhat obscure reference.

On the 4th August, 1876, the late Mr. Diggles read a paper before the Philosophical Society of Queensland on "Some New and Rare Australian Birds," which was mentioned in the Report of the Council for that year. The name *Poephila atropygialis* is again recorded on page 4, vol. ii. (1878) of the *Transactions of the Society*, while Dr. Ramsay also uses the name in his "Tabular List" (Proc. Linn. Soc., N.S. Wales, vol. ii. 1877, p. 187). A skin of *P. atropygialis* has been in the Australian Museum collection for years, and recently the collection of Mr. D. Le Souëf was enriched with a pair of these Black-rumped Finches together with their eggs taken by Mr. R. Hislop, in Northern Queensland, 9th June, 1899.

tinge—Ramsay). Dimensions in inches: (1) $\cdot 6 \times \cdot 45$, (2) $\cdot 6 \times \cdot 44$, (3) $\cdot 56 \times \cdot 43$; rounder examples: (1) $\cdot 58 \times \cdot 46$, (2) $\cdot 57 \times \cdot 47$, (3) $\cdot 56 \times \cdot 45$.

Observations.—Dr. Ramsay states:—"This fine species is distributed over the country between the Gulf of Carpentaria and Georgetown and its neighbourhood, where it is said to be common along with *Munia pectoralis* (White-breasted Finch), *Poephila leucotis* (White-eared Grass Finch), and *P. personata* (Masked Grass Finch). Its nest is an oval structure of interwoven grasses, having an opening at one end and partly concealed in long grasses drawn over the entrance. It is placed among the stronger grasses, or small bushes which grow here and there on the grass flats or among the leaves of the *Pandanus aquaticus*."

An early nest of this Grass Finch, which I was fortunate in finding at Townsville, North Queensland, 29th September, 1885, was situated in a pandanus, and contained three eggs. Later eggs have been taken in March and April.

410.—*POEPHILA MIRABILIS*, Hombroen and Jacquinot. —(259 & 260)
P. gouldia, Gould.

GOULDIAN GRASS FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pls. 88 and 89.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 378.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1148 (1886); North: Austr. Mus. Cat., p. 168 (1889).

Geographical Distribution.—North-west Australia, Northern Territory and North Queensland.

Nest.—Said to be similar to those of the other members of the genus, dome-shaped, composed entirely of grasses, and usually placed in a low tree or bush not far from the ground. But many authenticated nests found in the open have been constructed within the hollow of a tree (eucalypt) at various heights from the ground.

Eggs.—Clutch five; inclined to oval in shape; texture of shell fine; surface slightly glossy; colour, pure white. Dimensions in inches of odd examples: (1) $\cdot 7 \times \cdot 48$, (2) $\cdot 68 \times \cdot 5$, (3) $\cdot 68 \times \cdot 49$, (4) $\cdot 65 \times \cdot 49$.

Observations.—The glorious Gouldian Grass Finch is a frequenter of the northern parts of the Continent, and has been recorded as far south as the district of Townsville. It is sometimes called the Painted Finch by trappers.

How shall I describe its beautiful coat, which is composed of all the colours of the rainbow? Rich greenish back, brilliant purple breast, and shining yellow stomach, all beautifully relieved with velvety black (or red) face and tail, flesh-coloured bill (tipped with red) and feet.

Total length, $5\frac{3}{4}$ inches. Although adult birds may appear with black heads, others with scarlet, the blacks have been observed to moult into the scarlets.

Our older ornithological authorities held to the two varieties (the Black-headed phase and the Yellow or Red-headed phase) of this most lovely Finch. But observations in our aviaries, where the birds freely breed, have forced a conviction that the varieties are one and the same species. The note on the subject of the breeding of these Finches, mentioned by Mr. North as having been read at a meeting of the Linnæan Society of New South Wales (March, 1889), may be cited as proof:—"It may be interesting to know that several of the Gouldian Finches have bred in Dr. Ramsay's aviary at the Museum. A pair, male and female, of the Black-headed phase, hatched out on May 13th last three young ones, one of which, although having a dull-coloured breast, has developed the crimson head of *P. mirabilis*. There can be no doubt whatever that *P. gouldiæ*, the Black-headed phase, and *P. armitiana*, the Yellow-headed phase, are merely varieties of *P. mirabilis* originally described by Hombron and Jacquinot in the 'Voy. au Pole Sud.' Many specimens recently brought to Sydney show various stages of plumage above mentioned, bearing out Dr. Ramsay's previous statement respecting the various phases of plumage exhibited in this species."

The Black-headed phase of this Finch was discovered by Gilbert on Greenhill Island, at the head of Van Diemen Gulf, where, he stated: "It inhabited the edges of the mangroves and thickets; when disturbed it invariably flew to the topmost branches of the loftiest gums, a habit I have not before observed in any other member of the genus. Its note is a very mournful sound added to a double twit. Those I observed were feeding among the high grass in small families of from four to seven in number, and were very shy. The stomach is tolerably muscular, and the food consists of grass and other seeds."

Gould, while believing the Black-headed bird to be new, somewhat pathetically states:—"It was with feelings of the purest affection that I ventured in the folio edition to dedicate this lovely bird to the memory of my late wife, who for many years laboriously assisted me with her pencil, accompanied me to Australia, and cheerfully interested herself in all my pursuits."

However, the scientific name, *gouldiæ*, is likely to sink as a synonym in favour of *mirabilis*, though on the vernacular list we may fitly call the bird the Gouldian Grass Finch.

There is a singular fact in connection with the young birds that has not yet been recorded by other observers—that is, a protuberance upon the gape which (when the youngster is in a dark part of the aviary) reflects the light and shines with an opal-like brilliancy. Why nature has endowed the young birds with such lustrous mouth-pieces has not yet been determined.

Mrs. Clarke, Maryvale, about one hundred miles inland from Townsville, informs me she observed six or eight nests of the Gouldian Finch built in the hollow spouts of trees. In fact, she has never seen

this species build in any other situation, which, although not exceptional, is very unusual for Finches. The birds only appear at intervals during the wet season, or from December to March.

411.—*NEOCIMIA PHAETON*, Hombroen and Jacquinot.—(256)

CRIMSON FINCH.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 83.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 389.

Previous Descriptions of Eggs.—Ramsay: Proc. Linn. Soc., N.S. Wales, vol. i., 2nd ser., p. 1148 (1886); North: Austr. Mus. Cat., app. (1890), also Trans. Roy. Soc., South Australia, vol. xxii., p. 144 (1898); Le Souëf: Victorian Naturalist, vol. xvi., p. 69 (1899).

Geographical Distribution.—North-west Australia, Northern Territory and Queensland; also New Guinea.

Nest.—The usual bottle-shaped structure, composed of dried, frequently coarse, grasses, and lined inside with downy substance of grass seeds, feathers, &c. Usually situated in a pandanus tree, low bush, or in tall grass. Sometimes under the eaves of buildings.

Eggs.—Clutch, four to eight, usually six; vary in form from oval to lengthened oval; texture of shell very fine; surface slightly glossy; colour, pure white. Dimensions in inches of a clutch: (1) $\cdot66 \times \cdot45$, (2) $\cdot64 \times \cdot45$, (3) $\cdot64 \times \cdot44$, (4) $\cdot63 \times \cdot46$.

Observations.—This is one of the beauties, whether of the field or of the aviary, and it is known to dealers as the Pheasant Finch on account of its graceful shape, as well as the beautiful colouring of the feathers. The male bird is generally of a crimson colour, with a brownish tinge on the top of the head and wings, while upon the sides there are a few white specks. Length, $5\frac{3}{8}$ inches, including $2\frac{3}{4}$ inches for a somewhat lengthened tail. The female is rather smaller than the male and not so gaily dressed.

The Crimson Finch is found in the north part of the Continent, its southern limit on the east coast being about Rockhampton district.

I met with these beautiful Finches, but not all in mature plumage, in Northern Queensland, where I observed them feeding in grassy glades of the forest, and when flushed they invariably took to the low trees. However, I did not succeed in finding a nest, so I shall give Dr. Ramsay's remarks:—"The eggs here described were taken by Mr. J. Rainbird in 1864, from some of the nests at that time common on extensive grass lands near Port Denison. The nest is like all others of the family—a flask-shaped structure of grasses with a long narrow entrance placed on its side in a convenient place either in pandanus trees or adjacent shrubs, or among the stronger of the grass stems.

The eggs, four or five for a sitting, are small in comparison with the size of the birds: length, $\cdot 65 \times \cdot 45$ inch in breadth."

Mr. North also furnishes information of the Crimson Finch received from a correspondent, Mr. J. A. Boyd, quoting his communication, which states:—"After several attempts resulting either in young birds or empty nests, I obtained last Monday, December 9th, a nest of *N. phacton* containing eight eggs, all more or less incubated, seven of which I emptied successfully. These Finches seem to build exclusively among the leaves of the pandanus trees this season." Like the Plum-head Finch, the Crimson or Pheasant Finch is known to dealers as a "soft" bird.

Some years ago I received from the late Captain Smith examples of the eggs of the Crimson Finch from North-west Australia, where, since the advent of civilisation, the pretty birds have taken advantage of huts and other buildings. They sometimes stick their nests under the way-plates or eaves, lining them with such waste products as string, &c.

Mr. Keartland's observations (1896-7) of the Crimson Finch "at home" in the North-west are very interesting. He says:—"At each of the homesteads near the junction of the Fitzroy and Margaret Rivers these birds make their appearance during December, and immediately after the rainfall in January commence building their nests. At the Police Camp there were eight pairs of birds, which had located their structures on the plates of the verandah. Others had buried their nests in the reedy thatch of the stable. At Mr. Blyth's camp they were nesting under the eaves of the thatch, and the birds were so tame as to hop about the ground close to where we sat at breakfast. Although two birds were taken off their eggs and handled, they returned to their nests immediately they were liberated. At Mr. Harris's quarters that gentleman showed me an old nest fixed in a bundle of wire hanging on the wall of his storeroom, which was an enclosed galvanized-iron building without windows. The birds had to enter under the corrugations in the iron in front, and fly across the room. The birds usually disappear again as soon as their young take wing. The material used for the exterior of the nests is coarse outer blades of grass, so large that it is surprising how they carry it, but the lining is fine and soft. Six pure white eggs constitute the clutch. I never saw nests belonging to this species on trees or bushes."

Breeding months, usually the wet season—December to March, but sometimes as early as October.

In concluding my chapter on Finches, a few remarks on the method of catching such birds may prove interesting. The first item to be secured is a congenial companion who shares the responsibility of a covered van and a pair of good horses. Loading consists of a ton weight of seed, cages for 2,000 or 3,000 pairs of birds, nets of different sized meshes for different sized birds, the smallest being $\frac{5}{8}$ inch in mesh needed for Wax Bills, as the Red-browed Finch is called in the "profession," and so on up to 3 inches in size (that is by the square of the mesh), required to secure Cockatoos. These nets are generally home-made of carpet thread, and dyed or tanned with bark. Provisions

and camping utensils fill up the remainder of the van. The bird trappers then set out, stopping in likely country to prospect or take out one of the horses and ride round a bit, and camping from day to day till a load of birds is secured. Some 1,000 miles are travelled before the desired object is attained. Early in the morning and towards the evening the best catches or "pulls" are taken.

After a successful pull the trappers take the birds carefully from the net, as a fisherman would take fish, and place them in the "crowding" cage. These cages are in turn emptied into larger cages in the van. The Finches thus confined are watered and fed once a day, usually in the morning, and the cages cleaned every other day. The ideal bird catcher is not the lazy being some people imagine. He has to use cunningly-devised means to secure birds, and afterwards to attend daily to them, besides looking to the horses and cooking his own food. He must needs be enthusiastic, persevering, full of resources, keen-sighted, with discriminating ears for all bush sounds, especially the voices of birds.

What with left end pegs, right hand front cheek, side crooking and bridle lines, and other technical terms, it would take too long to describe the nets. Even the mode of taking a pull of birds, if stated in ordinary language, would prove incomprehensible to most readers. Sufficient to state that an ingenious contrivance in the shape of a net with right and left hand wings, each thirty feet long by six feet broad, is placed upon the ground; and when the wild birds are enticed by call birds in cages, or by a "flur" or play bird, the two wings of the net, with a dexterous pull of a line by the trapper in hiding, rapidly close and overlap in a remarkably easy manner. Thus the most wily of birds may be secured. When the van is full the birds are sold to agents, who ship them to European markets.

FAMILY—ALAUDIDÆ: LARKS.

412.—MIRAFRA HORSFIELDI, Gould.—(248)

BUSH LARK.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 77.

Referen c.—Cat. Birds Brit. Mus., vol. xiii., p. 604.

Previous Descriptions of Eggs.—Ramsay: Proc. Zool. Soc., p. 689 (1865); Campbell: Southern Science Record (1883); North: Trans. Roy. Soc., South Australia, vol. xxii., p. 141 (1898).

Geographical Distribution.—Whole of Australia.

Nest.—Open or cup-shaped; composed entirely of grass, and placed in a depression or hole in the ground, usually sheltered by a grass tussock or small bush. Dimensions over all, or hollow containing nest, $4\frac{1}{2}$ inches by $2\frac{1}{2}$ inches in depth; inside or egg cavity, 2 inches across by $1\frac{1}{4}$ inches deep.

Eggs.—Clutch, three to four; lengthened or long oval in form; texture of shell close and fine; surface very glossy; colour, greyish-white, spotted all over, particularly round the apex, with olive and grey markings; not unlike those of the Ground Lark (*Anthus*), but arc smaller and greyer in general tone of colouring. Dimensions of a proper clutch: (1) $\cdot84 \times \cdot54$, (2) $\cdot8 \times \cdot54$, (3) $\cdot76 \times \cdot55$. (Plate 16.)

Observations.—Horsfield's Bush Lark enjoys the length and breadth of Australia for its habitat. However, it is only a summer visitor to the southern parts, where a select few frequent the glassy glades and heath-like localities in open forest country.

The Bush Lark exactly resembles the Ground Lark in character of plumage, but has a stouter bill and shorter tail, which give it a chubby figure. Total length, $5\frac{1}{4}$ inches. Lark-like, this bird mounts into space and is the possessor of a melodious voice, and occasionally sings sweetly through the night.

The Bush Lark is a somewhat late breeder, commencing generally in November. It usually arrives in Victoria about the middle of October. However, the season 1896, a somewhat peculiar season for the arrival of early birds, my son saw one on 7th September, while Mr. G. E. Shepherd confirmed this early record by noting the birds at Western Port 22nd same month, remarking that the bird was fully a month in advance of his previous records. I saw fledgelings in Western Australia at Christmas-tide. Dr. Ramsay in 1861 took a nest containing three eggs at Macquarie Fields as late as 4th February. He observes that the front edge of the nest is smoothed down, the back part being left ragged and sometimes drawn forward as if to aid in the concealment of the precious eggs.

The eggs in my collection are from Riverina, but I have seen others taken near the coast at Cheltenham, Victoria, notably a pretty set (from which my description is taken) found reposing in a neat nest under a hibbertia bush by Mr. J. Sommers.

Dr. W. Macgillivray mentions that he has taken the nest and eggs of the Bush Lark several seasons in succession. The bird generally took about three days to construct its nest, and three more days to deposit its eggs—one each day.

Mr. C. F. Belcher writes:—"With regard to Larks, I have been frequently puzzled over a bird which is common from, say, October to January in the cornfields round Geelong. It appears to resemble Horsfield's Bush Lark most closely. I have never seen a dead one, but its peculiarity is mimicry. I have heard it at Moolap, on the Queenscliff road, imitate to perfection the Superb Warbler, Zosterops, and of imported birds the Sparrow and Greenfinch (both common in that locality). But of all its imitations the most surprising is that of

the 'Tomtit' (*Acanthiza chrysorrhoa*); one absolutely could not tell one from the other. It seems to have also a song of its own which I can hardly describe, but it is not a striking one. Do you think you could identify the bird from this description? I have never taken nest or eggs, but presume they are situated in the growing corn. The bird is generally high in the air, though I have heard it singing from a fence." There is little doubt that the bird referred to by Mr. Belcher was a Bush Lark.

In the "List of Birds" collected by the Calvert Expedition, concerning the Bush Lark, Mr. G. A. Keartland writes:—"On the grassy flats, which extend for some distance on each side of the Fitzroy River, these birds are so numerous as to convey the idea that the headquarters of the species is in that locality. When we arrived at the lagoon near the river mentioned on November 6th, I was surprised at their numbers. As we passed along, a constant succession of birds kept rising from the ground and flying to the right and left of our line, but seldom went more than twenty yards before they again settled. It was impossible to throw a stick in any direction without disturbing several. Around the lagoon they were found in such numbers as to remind one of Sparrows in a dry thistle field. They were very plentiful near the Fitzroy River Telegraph Station and at Mount Campbell, where they were found breeding in February. Their nests are usually placed near a small tussock of grass, or in a slight hollow formed by the pressure of a horse's foot; the material used to line them with is fine grass. The eggs are beautifully glossy, the ground being a pale stone-colour, almost obscured with brown spots. Four is the usual clutch."

Mr. A. J. North, who critically examined the birds of the Expedition, judging from one female only, hints that these Larks may be the same as the South Australian bird, separated by Dr. Sharpe as *M. secunda*. Mr. North has thus described the eggs of the north-west bird:—"Pale, yellowish-grey ground-colour, thickly covered with numerous yellowish-brown freckles and faint underlying dots of slaty-grey." Dimensions in inches: (1) $\cdot 8 \times \cdot 57$, (2) $\cdot 77 \times \cdot 57$, (3) $\cdot 77 \times \cdot 57$, (4) $\cdot 75 \times \cdot 55$.

413.—MIRAFRA SECUNDA, Sharpe.

LESSER BUSH LARK.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 603.

Geographical Distribution.—South Australia.

Nest and Eggs.—Undescribed.

Observations.—Dr. Sharpe was the first to point out that there was a second species of Bush Lark inhabiting Australia, which he says is very similar to *M. javanica*, but smaller and not so streaked on the chest.

The authorities of the Australian Museum call the Lesser Bush Lark by the vernacular name, "Rufous-winged," scarcely a good descriptive title, seeing that both the Australian Bush Larks are more or less rufous-winged.

FAMILY—ATRICHIIDÆ: SCRUB BIRDS.

414.—ATRICHIA CLAMOSA, Gould.—(204)

NOISY SCRUB BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 34.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 659.

Geographical Distribution.—West Australia.

Nest and Eggs.—See Appendix.

Observations.—Gilbert first met with this singular bird in the dense scrubs of South-western Australia, having had his attention attracted to it by its peculiar and noisy note long before he had an opportunity of observing the creature itself, and it was only after many days of patient and motionless watching among the scrubs between Perth and Augusta that he succeeded in obtaining specimens, all of which were males. Up to date I believe no female has been obtained.

Upon the receipt of these, Gould founded his genus *Atrichia*, and characterised the bird as one of the anomalies of the Australian fauna.

During my own western trip, when spending a few days in the forest at Tor Bay, about fifteen miles to the westward of Albany, one of the first strangers that came under my notice was the Noisy Scrub Bird, which lives in the thickets of undergrowth. Its very peculiar loud note is a kind of sharp whistle repeated eight or nine times rapidly, with *crescendo*, concluding in a sharp crack that makes the woods resound. Notwithstanding the presence of several pairs in the neighbourhood, I only succeeded in bagging one individual—and that a male—so rarely did the birds break cover. The bird was about eight or nine inches long, brownish, with very powerful legs and exceedingly diminutive wings, proving that it must spend most or all of its time upon the ground. The nest and eggs of the Noisy Scrub Bird would indeed have been a trophy. I searched and searched in vain for them. Once I thought I had discovered the nest in a patch of scrub frequented by a pair of birds. It was a covered nest, with a side entrance, not unlike that of the *Sericornis*, but it was without eggs.

415.—*ATRICHIA RUFESCENS*. Ramsay.

RUFIOUS SCRUB BIRD.

Figure.—Gould: Birds of Australia, fol., supp., pl. 26.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 660.

Previous Description of Eggs.—Campbell: Victorian Naturalist, vol. xv., p. 115 (1898).

Geographical Distribution.—New South Wales (Richmond and Clarence districts).

Nest.—Dome-shaped, with side entrance; constructed of dead leaves, ferns, twigs, &c.; lined inside with a curious whitish, cardboard-like material, and situated in a clump of grass about six inches from the ground. Dimensions, length 9 inches, breadth 6 inches, entrance $2\frac{1}{2}$ inches across.

Eggs.—Clutch, two; short or round-oval in form; texture of shell fine; surface glossy; colour, warm or pinkish-white, with a patch of confluent markings on the apex of pinkish-red or reddish-brown and purplish-brown, also spots of the same colours scattered sparingly over the rest of the surface. Dimensions in inches: (1) $.92 \times .72$. (2) $.87 \times .7$. (Plate 16.)

Observations.—Dr. E. P. Ramsay took his original description of the anomalous Rufous Scrub Bird from one of two examples obtained in the Richmond River district by Mr. James F. Wilcox and Mr. J. Macgillivray, June, 1865.

Dr. Ramsay describes the habitat of this remarkable bird:—"During a visit to Tarrango Creek, on the North Richmond River," he writes, "I obtained more than a dozen, but, to my surprise and disappointment, did not find a female among them. Only on one occasion did I meet with more than a single bird in the same place. They are always among the logs and fallen trees overgrown with weeds, vines, nettles, &c., and are the most tiresome birds to procure imaginable. As to their ventriloquial powers, *they must be heard to be believed*. They will mock a Spine Tail's (*Orthonyx*) chirp so well, that more than once I have turned round in expectation of seeing that species on the log behind me; and upon one occasion the note of *Pachycephala gutturalis* sounded so close above me that I went my way, believing I had mistaken a Thickhead for an *Atrichia*, and immediately after heard the latter uttering its usual chirping note, which closely resembles that of *Climacteris leucophaea* (White-throated Tree Creeper), and may be imitated by whistling the words 'chip! chip! chip!' several times in succession; it also indulges in a kind of scolding hiss, like that of the *Cisticola*. It is impossible to say what its own note really is. I have frequently stood on a log waiting for it to show itself from among the tangled mass of vines and weeds at my feet, when, all of a sudden, it would begin to squeak and imitate first one bird and then

another, now throwing its voice over my head, then on one side, and then apparently from the log on which I was standing. This it will continue to do for hours together, and you may remain all day without catching sight of it."

One of the novelties of the scrubs of the Richmond and Clarence River districts is undoubtedly the little Rufous Scrub Bird. There is only one other species of this extraordinary genus in Australia—in fact, in the whole world—the Noisy Scrub Bird, found in Western Australia.

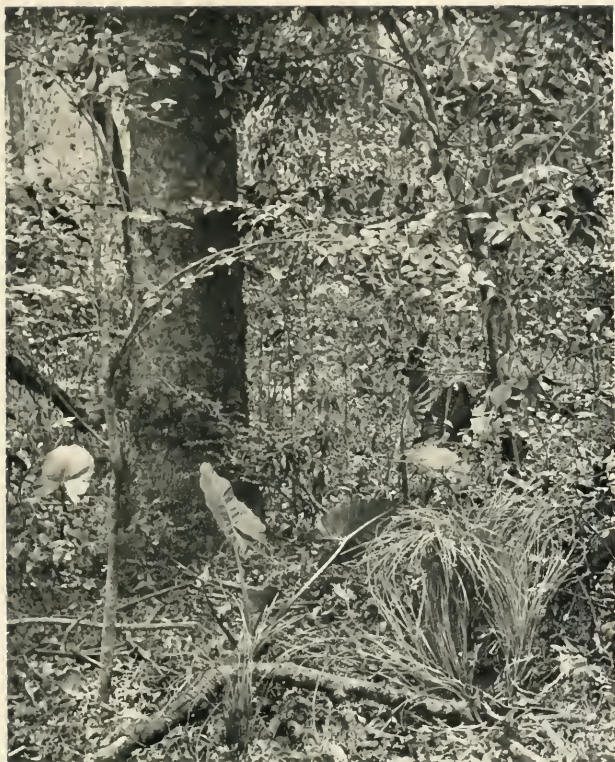
The eastern bird is much the smaller of the two and darker brown in colour, while it utters similar loud piercing notes to the western variety, in addition to the accomplishment of mimicking other birds of the scrub. It struts proudly over the ground with drooping wings and tail reflected over its back, not unlike a Lyre Bird—a trait of character hitherto unrecorded. The bird never leaves for a moment the tangled undergrowth or beds of rank herbage, which my companion and I hunted in vain for evidence of nesting (in fact, it was hopes of finding a nest of this curious bird that partly induced us to visit the district in 1891). Although we found no nest, we did not experience any difficulty in obtaining half-a-dozen skins, all, unfortunately, males. It is indeed most remarkable that the female of neither species of *Atrichia* has yet been procured. Some of the birds shot were moulting then (November), and I concluded that they had bred and that the breeding season was early, or even in the winter. However, I sent my son to the same district some years afterwards to look up a nest. He failed no better than myself, and returned with a skin only of a youthful bird—an inevitable male.

However, the credit of finding the first *Atrichia's* nest falls to that enthusiastic oologist, Mr. S. W. Jackson, and his party, who discovered it in the Bulabulah scrub, about seventy-five miles from South Grafton, in the Clarence district.

Mr. Jackson writes:—"I paid particular attention to the *Atrichia* during my visit, and laid aside no chances of following it wherever I heard it sing out. But I heard the bird more often than I observed it. They are shy birds.

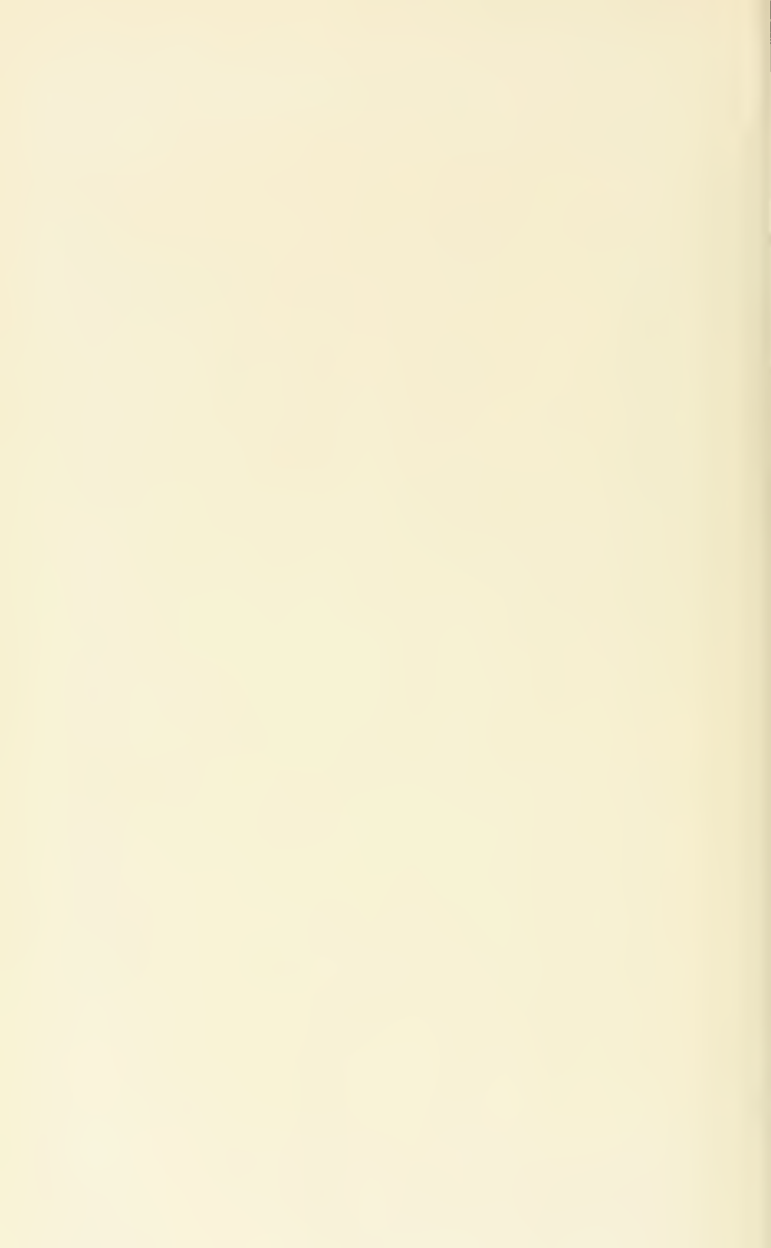
"On the 20th October (1898) we left camp at 8 a.m., after enjoying a good breakfast of damper and curried Wonga Pigeon. The four of us at about six hundred yards from our camp entered the scrub, which we had hardly been in, when we heard noisy Spine-tailed *Orthonyx* crying out in all parts. All at once an *Orthonyx* flew from a nest which was built at the foot of a tree. About three feet from this nest was a tuft of long green grass, out of which immediately after the *Orthonyx* flew the *Atrichia*. We rushed over and found it contained two fresh eggs, which we were certain must be the *Atrichia's*, considering the bird flew from the nest, and we all saw it was an *Atrichia*.

"After robbing the nest, we lay down concealed in ferns and undergrowth in the scrub for nearly four hours, and with gun pointed at the nest, waiting the return of 'Mrs.' *Atrichia*, but it was all for nothing, not the slightest sight of the bird was obtained.



CEDAR SCRUB—ATRICHIA'S NEST IN TUSSOCK IN FOREGROUND.

From a Photo by S. W. Jackson.



"I dug up the clump of grass containing the nest by the roots and took it to our camp and packed it safely away; I photographed it before I took the eggs. The inside of the nest is lined with a kind of composition just like cardboard.* It is the most peculiar lining I ever saw for a nest; the inside looks like a very small hollowed out pumpkin possessing hard sides. Not even a leaf or feather was inside, only the peculiar white cardboard composition. The front part of the nest looks like that of *Menura superba*, only, of course, much smaller; the egg chamber is the same shape as that of the latter species, and the eggs can be seen within by a person when standing in front.

"The following persons forming my nesting party were with me when the nest was found, namely, Messrs. Frank Jackson, L. Vesper, and J. McEnery.

"The finding of the set of *Atrichia's* eggs naturally caused great excitement in our camp, but the only thing we regret is that we could not get a chance to shoot the bird, as she never returned to the nest, although the four of us waited three and a-half hours."

Three and a-half days would not have been too long if only a female had been secured. The discovery of a second nest and eggs of the *Atrichia* will be awaited with great interest, not only by all ornithologists and oologists in Australia, but in other lands.

In conclusion, I must express my indebtedness to Mr. S. W. Jackson for his goodness in sending me these rare eggs for examination and description, also for the beautiful picture illustrating the site of the nest in the cedar scrub. (See illustration.)

FAMILY—MENURIDÆ: LYRE BIRDS.

416.—MENURA SUPERBA, Davies.—(179)

LYRE BIRD.

Figure.—Gould: Birds of Australia, fol., vol. iii., pl. 14.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 661.

Previous Descriptions of Eggs.—Ramsay: Proc. Zool. Soc., p. 49 (1868); Campbell: Southern Science Record (1882); North: Austn. Mus. Cat., pl. 10, fig. 4 (1889).

Geographical Distribution.—New South Wales.

*Mr. Jackson kindly gave me a sample of this material for examination. It is a vegetable substance, probably rotten wood, worked together when wet.
—A.J.C

Nest.—Large, oval, dome-shaped structure of sticks, twigs and roots, interwoven loosely with pieces of bark and moss, and roots and fronds of ferns; inside lined with rootlets and finally the loose feathers from the flanks and back of the bird. The entrance, which is in the side (or front) is not covered with a hood, but the lower ledge, if anything, protrudes slightly. Situation usually in ravines or gullies, and placed on the ground at the foot of some stump or tree, or by the side of a fallen log, sometimes it is placed on a ledge of rock in the face of a cliff at a considerable height from the ground; occasionally a nest is found in the end of a log which has been hollowed out by fire and formed into the shape of a scoop. Total length, 26 inches, height 12 inches, and width 18 inches; entrance 5 or 6 inches in diameter. (Ramsay).

Eggs.—Clutch, one only; stout oval, some inclined to an ellipse in shape; texture of shell somewhat coarse; surface slightly glossy, also minutely pitted; colour, as with those of *M. victorie*, individual specimens, varies somewhat, but is usually of a purplish-grey, blotched and spotted all over, thickest around the apex, with dark-brown and sepia and dull purplish-grey. Dimensions in inches: (1) 2.49 × 1.65, (2) 2.49 × 1.61, (3) 2.35 × 1.66.

Observations.—This extraordinary bird takes its name from two prominent tail feathers, shaped like an ancient Greek lyre. I continue to quote Dr. Ramsay's remarks in connection with this species of Lyre Bird (*M. superba*) of New South Wales:—

"The nest of this species differs according to the locality frequented by the birds—some being constructed of rough material, such as large sticks, stringy-bark (of *Eucalyptus*) and dead ferns (*Pteris aquilina*), others of very fine rootlets and pieces of *Hymenophyllum tubridigense*, which make a remarkably neat nest. Braisher, the most successful of my collectors, who also procured the young birds, called upon me a few days ago with some of the eggs, when I took the opportunity of getting all the particulars respecting the nidification. I find that in no instance did he meet with more than one egg or one young bird in the same nest. The birds commence to build in May, and lay their eggs in June and July. The female is not fed by the male, nor has the male bird ever been observed near the place after she has laid her egg. The female frequently leaves her egg during the middle of the day to search for food. This may account for the length of time taken in the hatching, which sometimes extends over a month. The young do not leave the nest until they are eight or ten weeks old. When an observer is standing in front of the nest, the egg or the young bird can easily be seen in it. The female enters the nest *head first*, and then turns round and settles herself on the egg, with her tail sometimes over her back, *but more often round by her side*. Thus in time the tail becomes askew, and is a tolerable guide to the length of time the bird has been sitting.

"The young, which are hatched early in August, but sometimes as late as the end of September, are of a whity-brown colour upon leaving the egg, but become darker as they get older; the crown of the head is covered with long, dusky slate-coloured down, which hangs over the neck (which is quite bare) on to the back: the wings have a fringe of shorter down round them, which is longest on their lower edge; the upper part of the rump, centre of the back, and the tail are also covered with down, while two rows of short down grow along the thighs. The bare triangular part of the neck is surrounded by a narrow fringe of very short down, while two ridges still shorter, and of a light-yellow colour, grow on either side of the breast or keel of the sternum. Down on the head from one and a-half to two inches in length, on rump and tail it is two inches long. Bill .5 inch in length, blackish-brown at tip; tarsi .8 inch in length."

The first nests (or those found up to 1868) that came into Dr. Ramsay's possession, with the exception of one, were procured in the Illawarra district, chiefly from the ravines and gullies in the neighbourhood of Appin and Wollongong. They were bulky and loosely built, and great care had to be taken in moving the nests to prevent them falling to pieces.

At a meeting of the Zoological Society (London), held 23rd January, 1868, Mr. Gould, who was in the chair when Dr. Ramsay's communication was read, exhibited skins of *Menura superba* and *M. victoriae*, with a chick and egg of the latter species, and directed the attention of the meeting to the peculiar condition of the bird at this early stage of its existence (two days after its emergence from the egg), when its appearance was so extraordinary as to render it difficult for the most astute ornithologist to determine to what genus it belonged, the entire surface being thickly covered with a lengthened sooty-black down, which assumed the form of a cowl or hood over the head, while the under surface was so sparsely clothed that the throat, flanks, and thighs were nearly naked. The chick also differed from those of most other birds in the feebleness or comparative non-development of the tarsi, toes, and nails. It is evident, therefore, Mr. Gould said, that the solitary young Lyre Bird remained sitting in its great domed nest, and was entirely dependent upon its parents for food and protection until its feeble legs had become fully developed and its body covered with real feathers. Whether the chick was blind on exclusion from the egg, was at present unknown, and this was a point it would be very interesting to ascertain.

Back in the brushes near Gosford, north of Sydney (New South Wales), Mr. R. C. Chandler observed several nests on ledges of sandstone, and in low cabbage palms.

A writer to a weekly journal gave as his experience that the Lyre Birds build in low places, in the roots of a tree that has been torn up with the wind, or in an opening between rocks, on the top of a stag-horn fern, or in the end of a hollow log. He never saw a nest more than fifteen feet from the ground.

417.—*MENURA VICTORIÆ*, Gould.—(180)

VICTORIA LYRE BIRD.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 662.

Previous Descriptions of Eggs.—Gould: Birds of Australia, Handbook, vol. i., p. 303 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 50, pl. 4, figs. 1-4 (1882); Campbell: Southern Science Record (1882), also Victorian Naturalist (1884); North: Austr. Mus. Cat., pl. 10, figs. 1-2 (1889).

Geographical Distribution.—Victoria.

Nest.—The inner or nest proper is constructed of the dark wire-like and fibrous material off fern-tree (*Dicksonia*) trunks and other fern rootlets, closely matted and interwoven with stringy leaves, moss, earth, &c.; the inside bottom being lined with the bird's own feathers. It is about twice the size and the same shape as a modern football, with an end lopped off, which serves for a rounded side entrance. This inner nest is embedded in or protected by an exterior construction composed of large sticks and twigs, which are extended at the bottom into a platform or landing-place at the entrance. Frequently over the whole structure are artfully placed a few fronds (dead or green) or other vegetation. The situations and localities, which are various, are given at length in the "Observations." Dimensions over all: height, breadth, and length, 24 to 30 inches every way; nest proper, 15 inches long by 12 inches in depth; inside, from wall to wall or from floor to roof, 10 to 12 inches; from entrance to back wall 13 to 14 inches; entrance 6 inches across, the ragged platform or landing-place extending 5 or 6 inches beyond the entrance.

Eggs.—Clutch, one only; inclined to oval or an ellipse in shape; texture somewhat coarse; surface minutely pitted but glossy; colour varies from light to very dark purplish-grey, largely blotched, more or less, with dark-brown or sepia and dull purplish-slate. Sometimes the markings are of a more spotted character, and are thickest on and around the apex. When full an egg weighs $2\frac{1}{4}$ ounces. Dimensions in inches of selected examples: (1) 2.6×1.74 , (2) 2.6×1.73 , (3) 2.42×1.72 . (Plate 16.)

Observations.—The chief difference between the Lyre Bird of New South Wales and the Victorian Lyre Bird is that in the latter species the rufous bars in the two outer tail feathers are more defined and broader, especially at the base, and the colour is much stronger and deeper. The darker tint is also observable in the tails of the females. Certainly these seem slender grounds (as Gould himself admitted) for separating the two species. But since that great naturalist's day, no ornithologist has been bold enough to say they are not distinct. However, it would be highly interesting to learn where the two species insulate or what tract of country divides the one kind of bird from the other.

The geographical limits of the Victorian Lyre Bird extend throughout the Australian Alps and adjacent spurs, as far westward



A FERN-TREE GULLY—HAUNT OF THE LYRE BIRD.

From a Photo by the Author.



as the Plenty Ranges, and southward through favourable tracts of country to the coast.

Gould named the Victorian Lyre Bird after our Gracious Sovereign Lady, in 1862, from specimens received from the late Sir Frederick McCoy.

At the same time Gould quoted the description of the nest as well as the following interesting notes sent to him by Dr. Ludwig Becker: "A nest and egg found on the 31st August arrived in Melbourne on the 4th September in a good state of preservation. This was somewhat astonishing, considering that the blackfellow carried them on his back day by day, wrapped up in his opossum skin (rug), while by night he had to protect them from wild cats and other animals. In Melbourne, unfortunately, or rather fortunately, the egg was broken, and an almost fully-developed young one dropped out, which would in the course of two or three days have broken through the shell.

"The young one is almost unfledged, having only here and there feathers resembling black horse-hair, of an inch in length. The middle of the head and spine are the parts most thickly covered, while the fore arm and the legs are less so. A tuft is visible on its throat and two rows of small and light-coloured feathers on its belly. The skin is yellowish-grey colour; feet dark; claws grey; beak black; eyelids closed.

"I believe that the period of incubation of the Lyre Bird begins in the first week of August, and that the young one breaks through the shell in the beginning of September."

Dr. Becker, writing in September, 1859, stated that in October of the preceding year a nest of the Lyre Bird was found in the densely wooded ranges near the source of the River Yarra. The nest contained a young bird in a sickly state, and large in size compared with its helplessness. When taken out of the nest it screamed loudly "teching-teching," the notes attracting the mother bird, which came within a few paces of her young and was shot for a specimen.

Probably the oldest data recorded with regard to the Victoria Lyre Bird are those given in Samuel Sidney's "The Colonies of Australia," published in 1853, wherein is stated that:—"In 1844,* Mr. Hawdon, with a party of twelve able-bodied men, including black native police, was instructed by the Government to open up a practical route for cattle from Western Port to Gippsland. It was while performing this journey that he had an opportunity of closely examining the shy and curious Lyre Bird."

* Mr. H. Kendall, when generously aiding me in reading the proofs of this work, brought under my notice a little publication, "Travels with Dr. Leichhardt," by Daniel Bunce (1859), wherein Mr. Bunce mentions that towards the end of 1839 he (Bunce), accompanied by some aborigines, made an excursion (probably the first naturalists' one) to the Dandenongs, chiefly for plants, but several "Bullen Bullen," or Victoria Lyre Birds, were obtained. Mr. Bunce was botanist and naturalist to Dr. Leichhardt during the first portion (from Sydney to Fitzroy Downs) of the Doctor's last unfortunate expedition, and afterwards curator of the Geelong Botanic Gardens.—A.J.C.

Mr. G. H. Haydon saw the Victoria Lyre Birds (3rd May, 1844) during his journey through Gippsland, and described them in his "Australia Felix," 1846, pp. 131-133.—E.A.P.

The oldest information I possess dates back to 1847, when a relative of mine commissioned a blackfellow named McNabb (a somewhat characteristic Caledonian name for an aborigine of the long defunct Yarra Yarra tribe) to obtain some tail feathers. He was absent a few days and returned with five tails, which he procured on the Yarra side of the Dandenong Ranges, and for which he received the reward of one shilling each.

Considering that the position of the *Menura* on the great list of birds is unique, and that the eyes of almost every ornithologist are directed towards this wonderful bird, not much has been written and surely much has yet to be ascertained regarding the economy of a bird that will soon become scarce on account of its particular haunts being invaded and destroyed by the march of civilisation, the enactment of laws by Governments without regard to the proper protection of peculiar native fauna (the Game Act notwithstanding, which *in letter* now protects the Lyre Bird all the year) and the introduction of such vermin as foxes.

I have endeavoured to add my quota to the literary knowledge of the Lyre Bird by the publication of such articles as "In the Wilds of Gippsland—Lyre Bird Shooting" (1877), "Notes about Lyre Birds" (read before the Field Naturalists' Club of Victoria, 1884, and afterwards reprinted in the "Scientific American"), and "Lyre Bird Nesting" (1884). Here it may be deemed proper to cull and re-write the more important and interesting parts of these articles, adding thereto subsequent personal observations as well as information furnished by friends and collectors favourably situated, amongst whom I may mention Messrs. D. Le Souëf, J. Gabriel, R. C. Chandler Robert Hughes. A. W. Milligan, and I. W. De Lany.

My first experiences among Lyre Birds were somewhat rough if not romantic. Towards the ends of the summers of 1875 and 1877, I visited some virgin forest country that was being thrown open for selection at Neerim, about twenty miles northward of what is now the flourishing district of Warragul, or the Brandy Creek of the old coaching days. Of course, much of the timber round about Neerim must be demolished now, but as I saw it one wonders how the rich chocolate-coloured soil, however generous and watered as it is with numerous delightfully cool and clear running streams, could sustain such a wealth of giant vegetation. The reader may gather some idea of its semi-tropical growth, so to speak, if he can imagine three great forests rolled into one thus:—Firstly, thickly studded elegant fern-trees entwined with various parasitical creepers, forming fairy-like bowers carpeted with a ground scrub of innumerable ferns; secondly, trees of medium height, such as sassafras, musk, pittosporum, native hazel, blackwood and other acacias, &c.; and thirdly, towering above all a great forest of gigantic eucalypts. Within, and under the triple shades of these leafy solitudes, is the true home of the wonderful *Menura*, commonly but erroneously called a Pheasant by the selectors.

On the occasion of the first trip the score of miles between the main Gippsland road and Neerim occupied nine hours of travelling, and was only marked by an uncertain "blazed" track, therefore I took

the opportunity of travelling up on foot with a party of selector friends, but I had to return alone. On the second trip I was again alone, and portions of the forest were on fire, the track at intervals leading by roaring and burning patches, sometimes through a blackened waste of prostrate timber still smouldering. Where trees had recently fallen, if I passed on the windward side I uncomfortably felt their feverish dying breath, and far too frequently others crashed down in the neighbourhood, bringing to my mind vivid recollections of unfortunate bushmen who had yielded up the ghost pinned to the chocolate-coloured soil by detached boughs.

However, during the two trips, and notwithstanding the extremely shy disposition of these birds, I was enabled to shoot ten males, all with fresh new tails, besides as many females as I required for my collection. Although Lyre Birds were numerous, great difficulty and much patience had to be exercised in procuring them, so terribly shy are they. You patrol leisurely up a gully or along the survey lines till you hear a bird merrily whistling on its hillock, or dancing ground, a little distance in, then you commence carefully—oh, so carefully, for one false step, an extra shuffle of the leaves, or the snapping of a twig under foot, and your prey simply disappears as if by magic—to crawl on your hands and knees, as often as not wriggling snake fashion on your stomach through ferns and scrub from stump to stump and from tree to tree. Listen! the bird stops singing as if instinctively knowing danger is approaching, whereupon you have to become like a statue, fixed to some fern root, and dare not move a muscle, no, not even if you feel a land-leech attacking your legs, or a large mosquito stinging the tip of your nose. Presently the bird commences whistling as joyously as ever. On you creep, every yard nearer, so that with the excitement your heart increases in palpitation till it throbs so loudly that you fancy the bird will hear it. All the time the close humid scrub bathes you in perspiration, while great beads stand upon your forehead, then rolling off, patter on the dried leaves beneath you. Affairs are desperate now, for at last you are within shooting distance and are peering through the ferns with uplifted gun, and finger trembling upon the trigger; but, alas, the bird possessing sharper eyes than you discovers you first, and is that very second off noiselessly and unperceived. There is no alternative left but to retrace your steps to the track, and your chagrin can be better imagined than expressed. This operation you may repeat on an average five times before you get even the slightest possible chance of shooting a bird. But I found the females easy to bag, for they frequently leapt into the trees overhead to survey me.

In addition to procuring specimens I was enabled to get glimpses of the remarkable Lyre Birds at home. Each male bird appeared to possess a little hillock or mound of earth, which it scrapes up with its immense claws, and upon which it promenades while displaying its beautiful tail by reflecting and shaking the appendage over its back within a few inches of the head, all the while making the gullies or forest ring with the most melodious whistle-like notes, interspersed

with curious noises, or with mimic songs and calls of other forest birds both large and small.

The toil attending the search for Lyre Birds' nests, of all nesting outs, is the most arduous, and must be experienced to be fully realized, because, firstly, these curious birds, contrary to the general rule, nest in winter, the wettest months of our year, consequently terribly boggy and greasy tracks have to be travelled; secondly, the physical features of the country to be scoured are of the roughest and wildest description, such as Gippsland alone can produce. You have to thread your way through closely-growing hazel scrub, knee-deep in wet ground ferns, then tear through rank, rasping sword-grass, cutting your very clothes, not unfrequently nastily gashing your unprotected hands and face; next, you may be entangled in a labyrinth of wire grass, holding you at every step and hiding treacherous logs over which your equilibrium is frequently destroyed, and landing upon your side, you grunt and struggle amongst rank vegetation. To climb the opposite hill you cross on "all fours" a wet saturated log which naturally bridges the gully. In accomplishing this awkward task, overhanging fern-trees laden with moisture dash in your face, drenching you nearly as much as if some one had thrown a pail of water over you. Notwithstanding the chilly weather, there is always an amount of warmth present in these dense forests, which, together with your wholesome exercise, you are soon perspiring, and gladly you halt now and again for breathing time at the head of some lovely fern gully overshadowed by giant timber where you stand in one of the silent picturesque temples of nature.

And in Thy temple will I, bending,
The wondrous works of God adore;
Thine is the pow'r, O Lord, extending
O'er all the world for evermore.

I said I had shot ten male Lyre Birds. By a strange coincidence, between the years 1884 and 1894, I either found or was present at the taking of ten nests, or an average of one egg a season, an ample and sufficient reward to satisfy any working oologist.

The dates of the finding were as follow:—August 3rd, 1884, three—two fresh, one half-incubated; July 24th, 1886, one, perfectly fresh; August 8th, 1886, one, half-incubated; August 2nd, 1891, one, slightly incubated; August 12th, 1891, one, addled; October 1st, 1892, one (second egg), fresh; August 11th, 1894, two—one not fresh, one about half-incubated.

I shall give a detailed account of the first outing (August, 1884), which may perhaps prove interesting, and also illustrate the class of country and particular spots where the Victoria Lyre Bird nidifies.

Having arrived at a station on the Gippsland line, I entered a coach for the mountains just as a late winter's sun was disappearing below the horizon. The team of two horses was anything but reassuring, judging from their points, which reminded one of the witty American's horse that possessed such good points that one could hang one's hat on them. However, by dint of much lashing, and the passengers occasionally dismounting, the animals were kept on their "pins" till the first change.



NEST OF THE VICTORIA LYRE BIRD.

From a Photo by the Author



We were then transhipped into a lighter conveyance drawn by one horse. By the light from the zenith of a three-quarter moon we bowled merrily through the forest, and the mountains were reached in due course.

At the coach terminus I was met by a friend, who accompanied me on foot some two miles into the range. This was the last but by no means the least enjoyable portion of my evening's journey, along a lovely moonlit mountain track, chequered by shadows of towering gum-trees, while the dense scrub on either hand sent forth aromatic fragrance which was alike refreshing and invigorating. My friend's good wife had supper waiting for us, after which we discussed the probabilities of obtaining Lyre Birds' nests on the morrow.

At length a beautiful balmy morn (for it had been a mild winter) broke, and was ushered in by the voices of many birds, the cheering pipe of the Magpie, the laughing of the Jackass, clinking notes of the Crow Shrike, with a perfect chorus from numbers of the smaller fry—Thrushes, Thickheads, Acanthizas, Wrens, &c.

After breakfast my companion and I started, suitably attired with leggings and so forth, for our mountain scramble. Up the track we scattered a few beautiful Mountain Thrushes. We ascended what I shall term the first gully, a slight indentation on the face of a steep mountain. The course was indicated by ground ferns, tree ferns, and open hazel scrub moderately studded with larger trees. When almost at this gully's source, my companion's joyous call betokened a find of more than ordinary interest. I was a little higher up the ridge. A few long downward strides soon brought me to his side, and we stood gazing upon a much coveted prize, a *Menura*, or Lyre Bird's nest. The nest was near a crystalline spring, and was cunningly concealed in ferns. The back part was placed up gully, while the entrance commanded a downhill view. I roughly sketched the situation, and took dimensions both in and out of the nest, and carefully side-blew the egg, which was much darker than usual. Then, with the assistance of my companion, we removed the nest bodily from its romantic resting-place and sewed it up in a large piece of canvas. The package was no small encumbrance, being about six or seven feet in circumference. My companion, who possessed broader shoulders than I, suggested he should take it down the gully and deposit it near the track, to be recovered on our return homeward.

Flushed with such early success, we hastened our steps across the face of the mountain and entered a second gully richly grown with ground ferns and with more dog or blanket wood than the previous one. I still elected to beat uphill, while my companion kept below. Good fortune favoured me this time. I discovered the second nest in a very similar position to the former one, but slightly smaller and more compact, and the egg was more beautiful and lighter in colour.

The third gully brought us to very slippery ground, and at times we had much difficulty in retaining our footing. We beat this gully to its source, and emerged on the summit of the range. Travelling along its crest for some distance we made a dip to the right into a hollow. This, the fourth gully, was not so steep, and was a somewhat

boggy watercourse. It contained some beautiful ferns, notably a pretty coral-like variety (*Gleichenia*), which in places entwined itself up the scrub to a height of ten or twelve feet. There were also a few sassafras trees. One of the saplings I felled, to serve as an alpenstock, and a very great assistance it was in such rough country, while its wounded bark emitted a highly scented and pleasant perfume.

In the fifth gully we came across deserted prospectors' diggings. Nearly all the watercourses show specks of gold, and experts state that payable reefs may yet be discovered in the district. However, all that we found of interest in our line were two old Lyre Birds' nests. They were conjoined and placed between two fern trees. The top one was probably last year's nest, the underneath one the preceding season's.

The sixth and seventh gullies were much alike in character, indeed all the courses are thickly timbered, with as much lying on the ground as is standing. It requires great perseverance and energy to travel through such country; the greatest difficulty is clambering over huge dead trees and other decayed fallen timber, which at all times are damp and slippery, but especially at this period of the year. You never know where your next footstep will land you. For instance, when you step upon a greasy tree-barrel it is extremely doubtful whether your foot will slip up, or down, or over the side. Should you surmount the obstacle successfully the chances are you may bottom a crab or earth-worm hole up to your knees in mud. This country is favourable for the great earth-worms that we hear so much about, but read very little of. Their size varies from three to seven feet. They produce subterraneously a peculiar sucking noise when receding rapidly into their holes. In such country you can only afford one eye to look for nests, while the other is reserved to navigate the scrub and observe locality, because, be it remembered, there is nothing easier than to get bushed in such heavily-timbered ranges.

By this time it was late in the afternoon, and we directed our thoughts homeward. We decided to make the eighth gully the last, to beat it to its source, thence again gain the top of the range. This gully became more enchanting as we neared its spring. The banks gradually steepened on either side, where, thickly studded, were noble tree-ferns, whose dark-brown trunks were overgrown with mosses, lichens, and parasitical ferns innumerable, and their long graceful fronds which met overhead, quite darkened and softened the picture. With such charming glimpses of primeval nature, the sense of smell was equally satiated by the powerful and delightful aroma that floated in the air from the blossoming sassafras above.

Along this secluded sylvan arcade I proceeded slowly and carefully, feeling assured that some Lyre Bird would choose such a romantic situation for its nest. I could hear my companion crashing through the timber up-hill. As I crawled from underneath a large fallen log, I instinctively cast an eye on the right bank, and my delight can be imagined when I espied the third nest backed up against a sassafras tree, with the entrance full in my face. I sent out a "coo-ee-ee" to my companion that made the hills ring again, at the same time the

unwonted noise frightened the poor bird off the nest. She gave one bound over a log and in an instant was out of sight.

After coming out of the ferns on the saddle of the range the walking was extremely rough, through thick hazel, rank brackens, and other obstructive scrub, not to mention sword and wire grasses; besides, when I left the birds and their nests behind, a reaction immediately set in, fatigue and hunger making themselves painfully obvious. I had not broken my fast for eight hours; as for my companion, he seemed to thrive amazingly on the rarefied mountain air and tobacco smoke. He appeared used to this sort of business. I reckoned with him that I could not proceed without something to eat. My spirits revived when he informed me there was a hut close by where we would be welcome for a meal. The sequel proved it, because the good wife, almost before she had welcomed us, placed the kettle on a roaring fire.

While we refreshed ourselves darkness supervened, and we were still two miles or more from home, with a rugged gully to be traversed. We stepped out merrily along the track on the saddle of the range and entered the gully, which was awfully dark; what little light the clouded moon gave was now completely shut out by the thick foliage. Creeping, crawling and climbing over the rocks, stumps, &c., became the order of the evening, and was a very awkward undertaking, not to say dangerous. Several times I slipped and banged up against a tree stem, which brought me up all standing. On one very greasy patch I came a regular "cropper" on my back, and had literally to shake myself together again before I could rise, and was just in time to notice, through the gloom, my partner perform a somersault into a wombat's hole. But one peep at Nature compensated for it all. Ours was the rare privilege to witness a living scene denied to thousands of our fellow-beings. An opening in the trees presented a most lovely vista. From our position we looked down the gully upon the crowns of a mass of tree-ferns. The clouds had now withdrawn from the face of the moon, and, like a grand transformation scene, the flood of light streamed in, giving all the graceful frondage and other foliage a most beautiful, subdued, silvered appearance.

After recovering, with a little difficulty, the nest we had deposited in the morning near the track, and navigating the cumbersome structure through the scrub, we arrived at my friend's home in time for a good supper, none the worse for our day's Lyre Bird nesting, the success of which exceeded our most sanguine expectations.

The Victorian Lyre Bird mates in May or June. At that time the males sing more lustily than at any other period, and, like human beings, don their best frills for courting, their sombre plumage appearing very sleek, while their graceful tail feathers are at their prime.

They commence to build at once. During the peregrinations of the forester, Mr. Robert Hughes, through the Dandenongs, he took particular notice of the foundations of a nest he saw on the 1st June, and, passing the spot on the 10th July, he observed that it was completed and apparently ready for the egg. A still earlier commencement of nest construction was noted in the same ranges by Messrs. R. C. Chandler and H. Kendall, and reported in the "Victorian Naturalist,"

May, 1892. They stated that on the 23rd March they found a newly-started Lyre Bird's nest, the walls of which were raised by the bird at least two inches between the time of their passing in the forenoon and return some three hours later.

The earliest authenticated record I possess of an egg noticed in a nest was on the 3rd or 4th of July. The nest and contents were subsequently washed down the gully by a great flood. Taking the three first nests I found as a guide, and judging by the state of the incubation, I should say they were laid about the beginning, middle, or end of July respectively, therefore we may infer that the nest generally is completed a week or two prior to receiving the egg, or about the beginning of July; that, as a rule, the egg is deposited during that month, and that the young is hatched about the beginning of September. The young accompanies its parent till the following laying season, and is often fed by her long after the youngster is able to help itself. When grown, the young may be distinguished by its noise—resembling that of a domestic fowl's chick—and by the chestnut colouring about the face and on the throat.

At my request, Mr. I. W. De Lany endeavoured to prove the length of incubation. He had one nest under observation, but unfortunately had to shift quarters before the period was completed. The egg was deposited in the nest on the 24th August, and when it was taken on the 15th September, or twenty-two days afterwards, incubation had not advanced much. However, the following note from Mr. De Lany shows he eventually succeeded. Writing from the Omeo district, 1898, he says:—"They (Lyre Birds) have been exceptionally late in laying this season, and the male birds have hardly whistled at all. I found a nest partly built and watched it till the egg was laid on the 1st September. The young bird did not appear till the 21st October, which is fifty days. I was beginning to think that the egg was unfertile, and that the old bird kept sitting on. Another nest that I found with the egg deposited a week later is not out yet (the time of writing), so the extraordinary length of time appears to be no exception."

I can find no evidence of Lyre Birds re-constructing their old nests, as mentioned by one writer, although the birds may build near, or even upon an old home, but, in rare instances, when the egg has been robbed, another egg has been found in the same nest.

I believe both birds aid in the construction of the nest, but the female alone incubates, the male keeping entirely away from his brooding mate.

Nests are usually placed near the ground in thick scrub, in valleys or gullies, or on ridges, as well as more level country, but generally in the neighbourhood of ferns and fern-trees, usually with a good outlook in front, or down hill.

I have already given the situations of the first three out of ten nests which I found. The following, briefly stated, were the situations of the remaining seven:—

(1) In a hazel gully, on right bank, picturesquely situated on a small rock, with a fair mountain streamlet passing the base of the rock.

Behind the nest were ground-ferns and other vegetation, the entrance facing west (*i.e.*, the stream).

(2) In a gully, on right bank, at the base of a fern-tree and sassafras sapling, by a stream, and backed up with a thick undergrowth of wire grass, &c.; entrance south-east; bird flushed.

(3) On the top of a range near the base of a giant eucalypt by a boggy stream. Entrance north, on right bank.

(4) On a hill side a foot or two from the ground, at the base of a tree-fern, and backed up with ground-ferns. Entrance faced north-east, down hill; bird flushed.

(5) In a somewhat open gully on the ground, well hidden with ferns, with stream at foot. On left bank, entrance south-west; bird flushed.

(6) In a gully well among the hills, resting on a fallen or reclining fern-tree and between four hazels at a height of six or seven feet from the ground. About seventy yards from a stream. Entrance facing south, downhill.

(7) On left bank of a very dark and narrow gully, backed up with ground ferns, and overshadowed by fern-trees; stream at foot; entrance east; bird flushed. In all these instances the egg lay buried amongst the feathers in the bottom of the nest. Only in one instance was the egg visible when I stood in front of the nest.

However, the nest is frequently built in such other places as the hollow of an old tree butt, in sassafras or musk trees, and still higher in forks of blackwood or even eucalypts. The highest Lyre Birds' nests to my knowledge were noticed by Mr. Le Souëf on the family property, "Gembrook." One was constructed in the fork of a white gum (Eucalypt) about seventy feet from the ground. Another was built fully eighty feet above the ground, on the jagged end of the barrel of a stringybark eucalypt, about one hundred yards from the house, the top of the tree having been blown off by tempest. In both these cases the trees grew in gullies.

When the female is sitting in the nest only her head and tail tips are visible at the entrance. The tail usually appears over her back or turned on one side.

Before leaving the situations of the nest I might mention one that was found by a botanical collector. It was wedged between four tree-fern stems (*Alsophila*) growing from the one base. The fern was afterwards grubbed and forwarded to a botanical institution in Italy. Another nest observed by a friend of mine 24th August, 1889, was built upon a high stump on Mount Feathertop, with snow upon the ground.

Probably the "record" for Lyre Bird nesting was performed by my enthusiastic friend, Mr. Joseph Gabriel and companions during four consecutive days (the three last of July and the first of August) in the season of 1893. It will be remembered it was just at the time when the Government of the day commenced to despoil the magnificent forest tracts of the Dandenongs by throwing them open as a village settlement. No small blame to Mr. Gabriel that he "cut in" for a few eggs before the birds fell to the settlers' pots.

The following is the "record" kindly furnished to me by Mr. Gabriel:—"First egg found in nest at foot of gum tree about thirty feet up-hill from creek. Measurement of nest 28 inches high, 24 inches broad, and 16 inches from back to front.

"Second egg (last year's) in nest foot of gum tree twenty feet from creek. A stick had fallen across the nest and flattened it. Evidently the bird could not get to her egg.

"Third egg in nest found on side of creek on a jutting mossy bank, very prettily situated.

"Fourth egg in nest at head of tributary, nicely placed on a bank. Two of us were talking here for ten minutes, disturbing the bird, which flew out, at the same time revealing her nest which we would have otherwise missed. You may guess I flew too down that bank!

"Fifth egg in nest in fork of musk tree growing in the creek; it was about ten feet from the ground.

"Sixth egg (last year's) in nest on fork of leaning fern-tree in bed of creek.

"Seventh egg in nest in bunch of grass well up the hill near Invermay house.

"Eighth egg in nest built at foot of gum tree only fourteen feet from selector's hut, or rather, I should say, the bark had been stripped off the tree to build the hut. Nest was found three weeks before the egg was laid.

"Ninth egg in nest on ground at butt of gum tree in creek.

"Tenth egg in nest placed on stump about twelve feet from ground well up-hill.

"Eleventh egg in nest in Perrin's Creek, at foot of fern-tree.

"Twelfth egg in nest in tributary of Perrin's Creek, on leaning fern-tree.

"Thirteenth egg in nest well up on side of hill.

"Fourteenth egg in nest on leaning fern-tree, well up the head of *Sassafras Gully*."

Mr. Gabriel added that the average measurements of the eggs were 2.52×1.66 inches. All the eggs, with the exception of the two added ones, were either quite fresh or just turning. They were all dark-coloured specimens excepting two, which were a trifle lighter.

Exceptions prove the rule. The Lyre Bird invariably lays a single egg a season, but rare instances of doublets are known. In the course of Mr. Chandler's long experience in the wilds of Gippsland, he has found nests containing a pair of eggs, notably on the 24th July one season, when he found two nests with each a pair of precious eggs—one lot was fresh, the other slightly incubated. Mr. Chandler kindly presented me with a pair, which at a glance one could see were as like as two peas, as the saying goes, but they were slightly smaller in their dimensions than the usual average size.

Mr. Le Souëf has also found a nest containing a doublet. It was the 25th August, 1893. Both eggs were fresh, but one was slightly lighter and larger than the other. On the following day he discovered on the steep bank of a creek another nest containing one fresh egg. Passing the same nest three weeks later, he was much surprised to see

a bird fly out, and on climbing to the nest he found a second egg had been laid. The egg was slightly addled and had, Mr. Le Souëf judged, been laid about a week, or shortly after his first visit. In both these interesting instances, and upon circumstantial evidence, it may be inferred that the respective birds laid two eggs, but there remains the possibility that each egg was deposited by a separate bird, especially in the first case, where the eggs which I examined were different.

I have yet to record another instance of the finding in a nest a second egg after the first had been taken. It occurred on the first October, 1892, when Messrs. Le Souëf, Chandler, and myself went specially to photograph an exceedingly picturesque nest. On reaching the spot, and to our astonishment, out flushed a bird which had commenced to sit upon a fresh egg. From this same nest, on the 31st July, or two months previously, Mr. Chandler took the first egg.

Although not exactly pertaining to its nidification, I may conclude my observations with other remarks as to the history of this most remarkable bird.

A writer has stated that on going to roost at night the Lyre Birds "choose a secluded spot sheltered from the wind, and mostly in a low tree." My observations are the reverse of this. About dusk I have watched them, till I almost lost their form, fly sometimes more than one hundred feet up to the thick branches of some great forest patriarch. They ascend by a succession of leaps and short flights from bough to bough and from tree to tree, always surveying the position after each move. I also know for a fact that birds have been observed coming out of gullies to roost on large dead trees on the ridges, where they have been shot. In roosting they do not congregate. Sometimes during moonlight seasons a cock bird from his elevated perch agreeably disturbs the midnight stillness of the forest by his delightful whistle. Speaking about night, it is said that the Powerful Owl (*Ninox strenua*) occasionally takes Lyre Birds off their roost.

The powerful sonorous ring of the Lyre Bird's natural song is not surpassed by any of its Australian compeers, and, as to its mocking capabilities, it certainly would appear to leave the world's wonderful mocking birds behind. The Lyre Bird's ear is indeed so accurate that it can imitate to the very semitone the vocalism of any of its forest friends, whether the "mo-poke" nocturne of the Boo-book Owl, the coarse laughter-like notes of the Jackass or Great Kingfisher, the crack-like note of the Coach Whip Bird, or the higher-pitched and more subdued notes of smaller fry. But perhaps the most extraordinary vocal performance is the imitating, not a single bird, but a flock. I have heard it imitate simultaneous sounds resembling exactly the voices of a flock of Pennant Parrakeets rising from the scrub. This clever feathered mimic is equally at home with other familiar forest sounds—the grunting of the so-called native bear (Koala), the barking of the selector's dog, the noise of the splitter's saw, or the clinking of his axe against the metal wedge—all alike are perfectly reproduced in the throat of this wonderful bird. There is a story told of a tramp who heard sawing sounds in a gully hard by. He went down to ask the supposed sawyers for matches, but found he had been duped by a Lyre Bird.

Mr. A. W. Milligan, who has recorded some facts on the imitative faculties of this "master of ornithological song and mimicry," says the only sound the Lyre Bird cannot successfully imitate is the sound of a bell attached to a horse's neck; the jingle-jangle of the bell as the horse moves its head in the act of feeding seeming to baffle it. It may yet be proved that this bird is also an able ventriloquist.

The birds seldom or never sing in windy weather, but in South Gippsland, where the mountain spurs terminate abruptly at the sea, and where birds may be found breeding within one hundred yards of the shore, it is delightful to catch their pure liquid calls above the boom of the ocean billows, or to hear their musical cadenzas mingle with "the sorrowful song of the sea."

It should be mentioned that only the cock bird whistles and mocks in this magnificent style; the hen makes but feeble attempts. I have heard her endeavour to imitate in a quiet way the notes of the *Strepera* and *Jackass*, and utter a squealing noise, especially about roosting time. Mr. Hughes has heard them making such sounds about the time the young begin to fly, as if the mother bird were teaching the youngster to use its voice.

The alarm note of both the male and the female is a short, sharp, shrill whistle, not unlike that produced by a person placing the tongue against the upper front teeth after the fashion of the street arabs. The call is a lower-pitched double note sounding like "bleck-bleck" or "bullan-bullan." Both sounds, by the way, are aboriginal names for the Lyre Bird.

Mr. I. W. De Lany, who has had considerable experience among Lyre Birds in Victorian forests, has not such a good opinion of the mocking capabilities of the bird as most observers. He writes:—"My experience as to mocking is that they do not, but every bird whistles exactly alike, and a bird during the first year, without a tail, is as perfect in his notes as the oldest. They only have the notes of a few of the birds they are amongst. If they mimicked I should think they ought to include every bird they hear. For instance, they have the voice of the Black Cockatoo, but not of the white one, nor of the Magpie, and many others I could mention that are reared in the same country with them. As to imitating chopping, sawing, cooing, &c., it is the same as the wonderful things the old bushmen tell us about—snakes chasing them, and Jackasses all congregating in a tree to laugh at them when their dray gets stuck in the mud."

As I have already mentioned, it is commonly known that the male bird possesses a little mound of earth, or hillock, or possibly more, which the bird scrapes up usually in the thickest of ground scrub. Upon this mound (which is about three feet in diameter) it capers and dances, also proudly drooping its wings and displaying its elegant tail, all the while pouring forth its varied songs. Between periods there comes from the throat a spasmodic buzzing or purring noise, while the tail with quivering quills is expanded or reflected over the back.

The food of the Lyre Bird consists principally of beetles, centipedes, scorpions, worms, land-crabs, and snails, and occasionally something more substantial in the shape of bush mice.



NEST OF THE VICTORIA LYRE BIRD.

From a Photo by the Author.



My friend Mr. R. C. Chandler tells some extraordinary bush yarns, yet I think he has not drawn the "long-bow" in the following two instances. Twice he noticed an albino cock bird in the Bass River district. It sang most melodiously and was a lovely creature. Its pure white plumage contrasted wonderfully with the eyes, bill and legs, which were black, while the tail was large, well formed, and of the usual colour.

On one occasion he witnessed two male birds fighting. Like roosters, they freely used their claws and bills, and in their excitement occasionally tripped over their tails.

It was mentioned in the "School Paper," Class III., May, 1896, that Mr. S. McNeilly, of Drouin, had stated he kept a pet Lyre Bird for more than eleven years. For six years the tail was like that of the hen bird. In the seventh year he got his tail complete, which grew in length until it was about 2 feet 5 inches long. This tail was shed every year.

In connection with this Lyre Bird I have given three illustrations. one, "The Haunt," depicting a typical Australian fern-tree gully; and pictures of two nests, photographed of course *in situ*.

418.—MENURA ALBERTI, Gould.—(181)

ALBERT LYRE BIRD.

Figure.—Gould: Birds of Australia, fol., supp., pl. 19.

Reference.—Cat. Birds Brit. Mus., vol. xiii., p. 662.

Previous Descriptions of Eggs.—Gould: Proc. Zool. Soc. (1858), also Birds of Australia, Handbook, vol. i., p. 312 (1865); Ramsay: Proc. Linn. Soc., N.S. Wales, vol. vii., p. 50, pl. 5 figs. 1-2 (1882); North: Austn. Mus. Cat., pl. 10, fig. 3 (1889).

Geographical Distribution.—South Queensland and New South Wales.

Nest.—Large, dome-shaped structure, with side entrance; outwardly composed of small sticks, roots, tendrils and portions of palm leaves; lined inside with green mosses and root-like vegetation. Usually placed in dense scrub on the ground, in the spur of a large fig or other tree, or on a rocky ledge. Dimensions (according to Gould) about 24 inches in length by 16 inches in breadth.

Eggs.—Clutch, one only; longish oval in shape; texture coarse; surface slightly glossy, also pitted and uneven; colour varies from purplish-grey to dark purplish-grey, sparingly blotched with dark brown or sepia and dull or cloudy markings, the majority of the markings being on the apex. Resembles the eggs of the other Lyre Birds, but appears somewhat rougher and less numerously marked. Dimensions in inches: (1) 2.52 × 1.66, (2) 2.38 × 1.69. A specimen, recently found by Mr. S. W. Jackson, is a true oval, with dimensions, 2.34 × 1.72.

Observations.—Having chosen principally Dr. Ramsay's remarks on the Lyre Bird and my own experiences for the Victoria species, I adopt observations recorded in Gould for the equally remarkable northern species—the Albert Lyre Bird (*M. alberti*).

I should have much liked to quote from the late Mr. S. Diggles' paper, "Habits of *Menura alberti*," read before the Queensland Philosophical Society, 29th January, 1874, but the article, I regret, is altogether too speculative and improbable.

I have enjoyed hearing one or two of these birds whistling in the almost impenetrable Big Scrub of the Richmond River district (New South Wales), which is about its southern limit. However, it is more plentiful in the coastal mountains over the Queensland border, while its northern limit does not extend beyond the Wide Bay district.

The late Mr. F. Strange was the first collector to explore for the nest and egg of the Albert Lyre Bird in the cedar scrubs of the Richmond River, where he spent ten days without finding his *desiderata*. However, he found a deserted nest at the spur of a large fig-tree, and learned from the aborigines that the birds lay in "cold weather" (winter), and not spring or early summer, as Mr. Strange very naturally supposed. He verified the natives' statement by shooting a young bird about four months old on the 24th November.

A correspondent (Mr. A. A. Leicester) wrote to Gould the general statement that Albert Lyre Birds commence to build in May, lay in June, and have young in July. They generally place their nest on the side of some steep rock, where there is sufficient room to form a lodgment, so that no animals or vermin can approach.

A communication to Gould from Mr. Wilcox, dated Sydney, 26th September, 1852, stated:—"It gives me much pleasure to forward to you the nest with egg of *Menura alberti*, which I have just obtained from the Richmond River. It was placed on a rocky ledge about one hundred feet above the stream, so difficult of access as to render its acquisition a task of no ordinary kind. Another nest was also found in the brush (scrub) near the water; it would seem, therefore, that there is no rule as to the elevation of the locality in which it is placed. Only one egg was found in each nest, and, from all the information I could glean on the subject, the bird never lays but one."

The original nest, forwarded by Mr. Wilcox to Gould, was figured (together with a pair of birds) in "The Illustrated London News," 19th March, 1853. Two nests were found in the Richmond River scrubs recently—July and October respectively—both with the egg heavily incubated. The egg in my own collection was procured in a roundabout way. It was from the famous oological collection of Mr. Philip Crowley, England, and was obtained by a person who went out to the Mary River, Queensland, to search for the lunged-fish, *Ceratodus*.

